THE

JOURNAL OF GAS LIGHTING,

WATER SUPPLY, & SANITARY IMPROVEMENT.

VOL. XVI. No. 395—19th YEAR.] LONDON, DECEMBER 10, 1867. [Subscription per Ann. { 15s. in Advance / 18s. Credit.] DOUBLE No. Price 1s.

RAMSAY'S NEWCASTLE CANNEL COAL. Analysis by Dr. FYFE, M.D.:—
9746 cubic feet of gas per ton of coal.
26-candle gas.
13¼ cwt. coke per ton of coal.
N.B.—Ramsay's Cannel most resembles the Marquis of Lothian's Cannel, but superior as to coke.
RAMSAY'S PATENT CONDENSED COKE,
DO. GARESFIELD COKE.

RAMSAY'S FIRE-CLAY ARTICLES.
GAS-RETORTS, introduced 1828.
FIRE-BRICK WORKS, established 1804.
FIRE-CLAY SANITARY PIPES, CHIMNEY-TOPS, and all Goods made of Fire Clay.
The Fire Clay is worked from Blaydon Main Colliery, is of excellent quality, and no expense spared in perfecting every article.
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Patentees of the Standard Gasometers for the Government, and of the
IMPROVED DRY GAS-METERS.
These Meters are warranted to measure correctly and not to vary, and have come into general use more rapidly than any Meters hitherto manufactured.
1862.
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CLASS X.—"*For ingenuity, completeness, and efficiency of apparatus used in measuring gas, and for excellence of material and workmanship.*"
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Ample experience has proved that, by carburetting common gas, its illuminating power may be doubled or even tripled, and its consumpt greatly lessened. Wax candles and oil lamps in consequence are being rapidly superseded, and gas is now used in many private houses and mansions where formerly it was not tolerated.
Information as to the apparatus, fluids, &c., may be had of GEO. GLOVER and CO., or CARLESS, BLAGDEN, and CO., HACKNEY WICK, N.E.

COWEN'S PATENT FIRE-CLAY RETORTS.
JOSEPH COWEN and CO.,
BLAYDON BURN, NEAR NEWCASTLE-ON-TYNE,
Were the only parties to whom a PRIZE MEDAL was awarded at the GREAT EXHIBITION of 1851, for "GAS RETORTS and OTHER OBJECTS in FIRE-CLAY," and they have also been awarded in the INTERNATIONAL EXHIBITION of 1862, the PRIZE MEDAL for "GAS RETORTS, FIRE-BRICKS, &c., for EXCELLENCE of QUALITY."
J. C. and Co. have been for many years the most extensive Manufacturers of Fire-Clay Retorts in the United Kingdom; and orders for Fire-Clay Retorts of all shapes and dimensions, Fire-Bricks, and every other article in Fire-Clay are promptly executed at their Works as above.
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Coal Office,
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THE OLD TUBE WORKS,
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ALMA WORKS,
WALSALL, STAFFORDSHIRE;
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Gun Metal, and all other kinds of Cocks, Stocks, Dies, and Taps, Galvanised Tubes, &c.
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AND
STREET-LAMP
MANUFACTURERS,
BELL BARN ROAD, BIRMINGHAM.
ESTABLISHED 1830.
All materials found for the alteration of Public Lamps for lighting with the Rod. Regulators with Lava Burners.

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Ports of Shipment, in the Firth of Forth.

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For prices and other information, apply to Mr. JOHN ROMANS, C.E., 53, Frederick Street, EDINBURGH.

IMPERIAL CONTINENTAL GAS ASSOCIATION.
The HALF-YEARLY ORDINARY MEETING of the Imperial Continental Gas Association was held at the London Tavern, Bishopsgate Street Within, on WEDNESDAY, the 27th inst., when the following Resolutions were passed:—
Resolved,—That the Report upon the affairs of the Association now read be received and entered on the minutes.
Resolved unanimously,—That a Dividend of £2 10s. per share, and a Bonus of £1 per share, be declared upon the 28,000 shares of the Association for the half year ending the 30th of June last, and that the said Dividend and Bonus be payable, free of income-tax, on and after the 15th of December next.
That the cordial thanks of the Meeting be given to the President and Directors for their able management of the affairs of the Association, and to the Chairman for his conduct in the chair this day.
That the thanks of the Proprietors be given to Mr. G. W. Drory, the General Superintendent of the affairs of the Association on the Continent, for the ability with which he attends to the business of the Stations.
By order of the Board of Direction,
ALBERT F. JACKSON, Secretary.
No. 30, Clement's Lane, Lombard Street,
London, Nov. 28, 1867.

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Patentees of the Standard Gasometers for the Government,
TWO MEDALS,

LONDON, 1862.
HAVE OBTAINED THE
HIGHEST
PRIZE
FOR
SILVER MEDAL,

PARIS, 1867.
IMPROVED DRY GAS-METERS AND GASOMETERS,
AT THE
PARIS EXHIBITION.
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AND 127, BOULEVARD DE MAGENTA, PARIS.

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With an Analysis of the Report presented by the Committee to the House.

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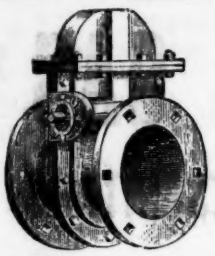

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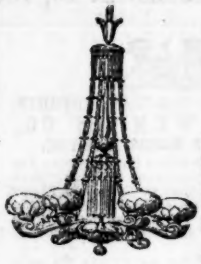

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1½ ,,	0 11 0
1¾ ,,	0 14 0
1½ ,,	0 18 0
2 ,,	1 2 6

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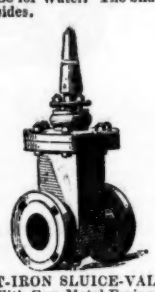
With Gun-Metal Valves & Seatings.

Bore.	Price.
2 inches	£1 2 6
3 ,,	1 17 6
4 ,,	2 15 0
5 ,,	3 15 0
6 ,,	4 17 0
7 ,,	6 0 0
8 ,,	7 5 0
9 ,,	8 15 0
10 ,,	10 10 0
11 ,,	12 5 0
12 ,,	14 0 0



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With Gun-Metal Facings.

Bore.	Price.
2 inches	£1 10 0
3 ,,	2 5 0
4 ,,	3 0 0
5 ,,	3 16 0
6 ,,	4 14 0
7 ,,	5 14 0
8 ,,	6 16 0
9 ,,	8 0 0
10 ,,	9 6 0
11 ,,	10 14 0
12 ,,	12 4 0

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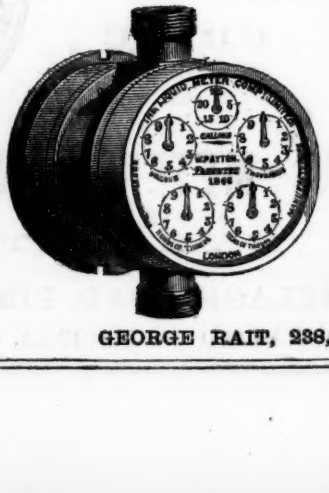

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PARIS EXHIBITION,

1867.

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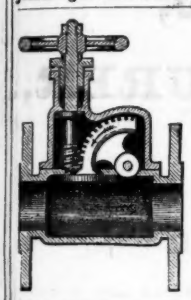

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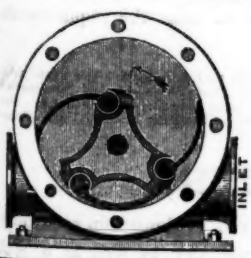

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(From 250 Feet to 200,000 Feet per Hour.)

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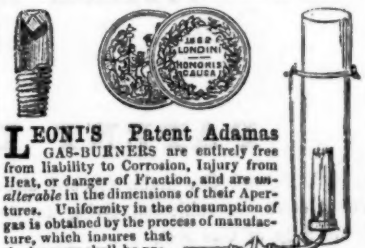

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THE

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HAS BEEN AWARDED THE HIGHEST PRIZE FOR

DRY GAS-METERS,

BY THE IMPERIAL COMMISSIONERS FOR THE

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(SUCCESSORS TO SAMUEL CROSLEY),

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"It is well known that n Meters constructed so that the valve will close when the water is drawn off to such a point as to render them 3 per cent. slow the lights are liable to be extinguished by the closing of the valve by a sudden increase of pressure. To meet this difficulty, Mr. Pinchbeck has invented an ingenious and simple arrangement by which the action is reversed, and any such increase of pressure, in his Meter, raises the value instead of depressing it. The fact of the improvement having been adopted by Messrs. W. Parkinson and Co. is a sufficient guarantee that it practically and effectually remedies the inconvenience it is designed to meet."—JOURNAL OF GAS LIGHTING.

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Which can be seen at all the London Gas-Works. Also Liverpool, Manchester, Sheffield, Nottingham, Belfast, Glasgow, Birmingham, Dublin, Bristol, Leeds, Leicester, Brighton, Southampton, Sunderland, Wolverhampton, Bradford, Norwich, &c., &c.

TEST GASHOLDERS, EXPERIMENTAL METERS, EXHAUSTER REGULATORS,

MINUTE CLOCKS, PRESSURE GAUGES, PHOTOMETERS, PRESSURE REGISTERS, &c.

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NOTICES.

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TO CORRESPONDENTS.

PURIFIER.—*Some limestones produce lime weighing less than 45 lbs. per bushel, and others 50 lbs. and upwards, so that no general rule can be laid down as the proper weight of a bushel of quick lime.*

CARBON.—*Companies are, we believe, in course of formation for the supply of the Albert cannel from New Brunswick, and petroleum from Trinidad, both of them producing gas of high illuminating power.*

THE JOURNAL OF GAS LIGHTING,
WATER SUPPLY, & SANITARY IMPROVEMENT.

TUESDAY, DECEMBER 10, 1867.

Notes upon Passing Events.

THE cab question stands first in every public and private meeting in London. No cabs after four o'clock in the afternoon meant, to a great many people, no evening parties, no friendly visits in the suburbs, no Christmas dinner or other dinner parties, no pantomime or other Christmas amusement. Fortunately the cabbies relented under the influence of Lord Elcho, and consented to take the good fares that always flow upon them at Christmas time. The Home Office has deferred the enforcement of the lighting decree for a season, and resolved to give the whole cab question a comprehensive review. About the necessity of lamps for cabs and every other vehicle that drives fast at night in London there can be no dispute, except on the part of those who have to pay for them; and as to the mechanical difficulty of fixing a lamp on a four-wheeled cab, the objection is perfectly absurd. The difficulty is the cost, and nothing else. A cylinder of sheet iron, an inch in diameter, on the roof behind and a little higher than the driver's head, would hold a lamp perfectly without any appreciable addition to the weight of the vehicle. The question between the cab-drivers and the public is purely a money question. We have recently expressed an opinion that, as a class, they have been very hardly used, but for all that we cannot allow them to fix their own fares and regulations. We need much more close and frequent inspection of cabs, for nothing else will keep up a standard of decency. We need more care in licensing drivers. These restrictions should be accompanied by a large reduction of taxation, and the application of some part of the revenue to the direct benefit of the cab-drivers. In this climate it would be well to provide, wherever the space will admit, a light roof on iron pillars for a certain number of cabs on each stand. It would be wise to have a room, as a house of call or club-room, also near the most important stands—it need not be facing the street or on the ground-floor, as communication could be established by a bell ringing from the water-tap. For the benefit of the public there should be not only information boards of distances and fares at stands and outside police stations, but some one in authority to give information to inquirers. Nineteen pounds five shillings a year is a tremendous sum to draw from a single cab and horse. If the whole result of the tax is only £122,000 a year, we could spare it much more easily than the tax on pepper. But a reduction to ten pounds a year would, no doubt, be gratefully received. For ordinary accommodation the present fares are quite high enough, but it is probable that plenty of people would pay a shilling a mile for something better. If, for instance, shilling cabs were all painted red, with red lamps, there could be no mistake. If tramways should succeed, the cab trade will meet with formidable competitors. The policy of the public is that the cab trade should be in the hands of great proprietors with ample capital, who can afford to have the best of everything, and keep cabs, horses, and harness in good condition, whether the season be profitable or not. The price of corn has risen one-third since the fare was reduced to sixpence a mile.

The cattle and meat question, of all things in the world, has brought the Corporation of London and the Metropolitan Board of Works into collision; but the Corporation wins easily. The Government has at length been forced, by an overwhelming weight of evidence and the pressure of all the classes interested in British live stock, to frame a Bill for excluding foreign cattle from the chance of mingling with and infecting our herds. The Government Bill proposes a foreign cattle market at every port of debarkation, and *abattoirs* where all shall be slain before passing out of the walls of the market. The first idea was to break through the monopoly of cattle and meat markets granted to the Corporation of London, and to entrust the management of the new establishment to the Metropolitan Board of Works. The Metropolitan Board, naturally anxious to increase its own importance by new functions and new revenues, met the idea with rapturous zeal. The Corporation, led into a false position by the ignorant and energetic publican who presides over the Markets Committee,

discussed the question with mingled feelings of aversion to any new market committee, and fear lest rejection should give new powers to their hated rivals. The Corporation is in an essentially false position as regards the Cattle Market. They opposed the removal of the market from Smithfield until Parliament overpowered their conservative attachment to a gross abuse. Having the choice between building a new market and allowing the power and patronage to fall into other hands, they revenged themselves, or consoled themselves, by a lavishly absurd expenditure on the coldest, bleakest hill of clay they could find round London. They sank thousands of pounds on useless brick and mortar—still standing monuments of Corporation folly—while neglecting to foresee and provide convenient railway and other essential communications. In looking over the plans of the market, there appears a reckless desire to spend money. What members of the Corporation—brothers, uncles, cousins, sons-in-law—may have profited by the broadcasting of the market debt, it is not worth while to inquire. It is enough that this market debt has hung round the Corporation's neck like a millstone ever since it was opened until the year of the cattle plague. In the hands of a small company, the Cattle Market would have been a highly profitable speculation; but then they would have consulted the wishes of their customers, the salesmen and butchers. But Common Councilmen, as a rule, disdain to be taught, and seem to believe that blue catskin-trimmed robes inspire them with universal knowledge.

The regulations and restrictions rendered inevitable by the cattle plague, gave the Metropolitan Market a virtual monopoly of all the cattle brought to London. They were detained a long time in the Corporation lairs, and in great part slain in the Corporation *abattoirs*. Hence an unaccustomed revenue arose. The dictator whose duty it was to carry out, and often to frame, the Cattle Market restrictions was the before-mentioned chairman of the Markets Committee—a Newgate Market publican, a vigorous, energetic man, with all the unpleasant peculiarities of the classes amongst whom he received his education and earned his money. There is, as the Latin poet says, "a manner of doing things," and the *modus* of this personage dressed in a little brief authority has had the effect of making the cattle salesmen and the butchers unanimously hostile to the Corporation. The one idea of the Markets Committee has been to increase its revenues by increasing the dead meat trade of their two markets, and by compelling as many cattle as possible to be killed at Camden Hill, to artificially increase the trade of the carcase butchers, a majority of whom happen to be the constituents and supporters of the chairman of the Markets Committee. With this end, every means was taken to extinguish private slaughter-houses, and a grand scheme was sanctioned by the Corporation for laying out some thirty thousand pounds in *abattoirs* at Camden Hill, in which they proposed to carry on the trade of slaughterers, having steadily in view the idea of putting down all private slaughter-houses by Act of Parliament. Going a step further to create business for these *abattoirs*, the energetic chairman projected the ridiculous scheme of a new market for foreign cattle, to be separated by a wall only from the British market, with the view of killing all the foreign cattle in the new *abattoirs*. The complete scheme had one great merit—it would have paid the Corporation well if executed without any extravagant jobbery; and, at the expense of the cattle salesmen and butchers, it would have thrown a great trade into the hands of the chairman's constituents, the carcase butchers. It was, therefore, received with favour, and supported by a large majority in the Common Council; but it had one fatal defect, it would have perpetuated all the onerous and costly restrictions created by the invasion of the Rinderpest, without giving the slightest protection against its recurrence; for, as there must necessarily have been constant intercourse between the salesmen, drovers, and *dogs* in the two markets and at the *abattoirs*, the disease would have been propagated just as easily as if the cattle stood side by side.

It was under these circumstances that a class, hitherto unknown as orators (except in self-laudatory harangues at the feasts of Butchers Hall), assembled at the Freemasons Tavern, and made a formidable, if not altogether wise, demonstration against the project of the Common Council. On one point they were strong—the folly and injustice, to the public, of abolishing well-conducted private slaughter-houses, and concentrating the whole killing trade at the Metropolitan Market. When they doubted the importation of the Rinderpest, and protested against the separate foreign market and killing place on the Thames—a necessity that every one except salesmen, butchers, and the owners of the Camden Hill Market admit—they talked nonsense, but not greater nonsense than such experienced public men and reforming orators as Mr. Lowman Taylor talked at a late meeting of the Metropolitan Board. He argued that the country was not to be protected from the reintroduction of a plague which had sacrificed over 300,000 beasts in two years, because the Corporation of London had spent half a million of money on a market which might have been made fit for all useful purposes for a quarter of a million. It is the clap-trap of a vulgar popularity seeker to dwell on the cost and the taxation needful for a measure to protect against a fatal plague. It would be just as wise and honest to declaim against the cost of vaccination, of fever hospitals, or of town drainage. Butchers are not expected to know any better, but the leading lights and philosophers of the Common Council should. The butchers meeting was presided over by a reformed sinner, of more than ordinary eloquence, who joins the spiritual to his secular calling, and, after killing and cutting all the week, preaches on Sundays with considerable effect. It was perhaps a pulpit reminiscence that induced him to call the chairman of the Markets Committee, amidst the frantic applause of his audience, the "Archfiend" of the butchers trade. In this epithet he certainly did injustice to Beelzebub, for does not a great authority, a poet, say—

> The Prince of Darkness is a gentleman.

Now, that is a character that the best friends of Mr. Rudkin would disclaim for him with disdain. On the contrary, he affects a Newgate Market style of roughness that some deluded strangers may take for frank straightforwardness. We will not pretend to say whether the French gentleman, whose acquaintance he made during a visit to the Paris *abattoirs*, was right in describing our publican Common Councilman's style as "*hypocrisie brutale*."

The Doulton-Roche scandal continues to excite, amuse, and waste the time of the Metropolitan Board and the Lambeth vestry—a pleasant interlude for listeners after a great deal of dull, dry work. Mr. Roche is realizing the old proverb, that "the man who is his own lawyer has a fool for his client." He was not satisfied with the minutes, because they did not give his speech as well as his enemy's. He forgets that in questions like this no one refers to minutes—every one reads the newspaper reports. As the matter stands, Mr. Doulton has denied the charge at great length, and in various phrases, and carried the war into the enemy's country, but he has left the *primâ facie* evidence just as it stood; and, although the world is bound to believe him, it is suspected that a great many do not! Mr. Roche's speeches are not quite so long as the M.P.'s, but he admits the soft impeachment with a difference. He did, he owns, hedge so as to have two chances for the contract for granite. No doubt his candour will get him clients, who admire craftiness in their *own* lawyers. If he had been fortunate enough to "square" the engineer, he would, no doubt, have still more increased his reputation as a sharp practitioner. At Lambeth the unhappy Mr. Doulton, late the honoured dinner guest of the King of the Belgians, had to stand the shots of father and son, the two parish patriot shoemakers, whose virtues have not yet obtained for either of them invitations from royalty, unless it were to measure for a pair of pumps. That the story demanded inquiry no one can deny; but whether the Taylors, father and son, were all for virtue may be doubted. In reference to this Lambeth mystery two quotations from Shakspeare suggest themselves as applicable: to Messrs. Doulton and Roche—

> I think my lady doth protest too much;

and to their indignant Metropolitan colleague—

> Oh! my good lord, beware of jealousy.

Altogether, this teapot storm, and the interest it excites, reminds one of a story that the present Chancellor of the Exchequer, when out of office, during a debate in which one of his dullest, dreariest supporters protested against "personality," was overheard to mutter—"Personality, personality; there "is nothing worth hearing but personality."

Speaking seriously, the sooner the Metropolitan Board set to work in earnest to obtain the command of the new foreign cattle market, or some other working business, the better for themselves and the metropolis. They have a good claim, because they represent two-thirds of the consuming population. They will want something to do when the embankment is finished. They are new, and would carry on the business with

the usual vigour of youth. They are not infiltrated by the narrow trading interests of the carcase butchers, publicans, and others, who weigh upon the decisions of the Corporation of London. A wholesome competition would be established, and each body would be glad to conciliate both the meat trade and the public; while the division would do no harm to the Corporation markets, as the enormous demand for meat leaves quite room enough for two markets. The foreign trade was not dreamed of when the Metropolitan Market was laid out.

Our article smells very much of the butcher's shop this week, but it is not inappropriate to Christmas time, when the greatest sight of London is the Agricultural Hall, with its hundreds of stock, fed, it may truly be said, within an inch of their lives; while in the galleries the intelligent foreigner will find something like an acre of the best agricultural implements—a genuine trade display, far superior, for all practical purposes, to the toy-like preparations of Universal Exhibitions. After a careful walk through the Smithfield Club Show, the visitor will not be much inclined to listen to the arguments in favour of taking to horseflesh as an article in substitution of our ordinary roast and boiled. There may be seen what careful breeding and good feeding will make of cattle and sheep. The forefathers of these square, sleek, plump oxen and cows were not much superior to the wretched beasts that draw carts, or both draw and give milk, on the Continent, for five, six, seven, ten years, before yielding up their wretched lives to the butcher. To the Frenchman or German who is accustomed to these skeletons of what live beef should be, the step to a well-stewed lump of horseflesh is not long or difficult. Our ideas would rather turn to making the best use of the materials we have at hand, inducing Ireland to follow the example of Scotland, and proceed to replace all her inferior breeds by the best blood of England, and to feed them for home, instead of exporting the majority to England and Scotland as lean stock. A hundred years ago the Scotch cattle were all little, rough, insignificant beasts, chiefly valuable for their horns, hides, and rapidity of travelling. Now, some of the best of the wild huge shorthorns come from Scotland. The black-polled, from Aberdeen and Galloway, has been civilized, smoothed down, and enlarged into a rival and relation of the shorthorn; and the Highland stot has so benefited by Scotch roots and foreign cake, that he takes the top price in the London market. Ireland has made enormous progress in cattle breeds—would that there were as much progress in its people toward civilized life!—but there is room for an increase of half a million if Ireland were cultivated on Scotch principles. Amongst the curiosities of the Show are three Kerries—a diminutive race, which is rapidly becoming extinct; a dairy race, fit for cold hills and hard living, but not to be compared as a cream-giver to the Alderney. Mr. Frank Buckland's hopes are also realized by the exhibition of a fat eland, a huge African antelope, weighing a ton, according to report; but, as no fence could keep it in under nine feet, as it has no fat to speak of, and falls off terribly in his roasting parts, we do not think that Lord Hill has sent to the Show a specimen of the beef of the future, but only a great delicacy, on the qualities of which we hope to pass an opinion before the end of next month. It is not a little curious that the Show does not present a single specimen of the best mutton that comes dead to the London market—the black-faced Highlanders. Down mutton comes alive. Our old friend, the intelligent foreigner, should not, even if not agricultural-minded, miss a visit to the Smithfield Club, because he will see not only the origin of our best boiled and roast, under a specimen of modern British iron architecture, but very fine specimens, too, of the Englishman and woman, from the far north to the soft south and west.

Circular to Gas Companies.

Not the least curious of the many phases which metropolitan gas agitation has assumed during the last ten years, was the application made on the 28th ult. by Mr. Beal and his colleagues, almost *in formâ pauperis*, to the Corporation of the City of London, for help to enable them to pay the costs of the notice given by Messrs. Wyatt and Metcalf, at the instance of Mr. Beal, for a Bill to amend the Metropolis Gas Act of 1860, and to carry out, with some additions, the recommendations of the report of Mr. Cardwell's committee of last session. Mr. Beal, who now stands revealed as the responsible instigator of that notice, which was at first erroneously attributed to the Board of Trade, was hurried into so doing by the refusal at the last hour of the Metropolitan Board of Works to give notice of a Bill on the subject; and he ventured to take on himself the risk of expending £300 in the hope that the vestries of the metropolis would support him. Legal authorities have, however, expressed the opinion that the Metropolis Local Management Act gives no permission to the vestries to apply the money of the ratepayers to such a purpose; therefore Mr. Beal and the "delegates," as they style themselves, have petitioned the Corporation to aid them in their predicament, and to take the responsibility of the notice upon themselves. Mr. Dresser Rogers, who introduced the petitioners, called on the court to imitate the example of the "noble-minded men," their predecessors in office, who, in in times past, expended thousands upon thousands of pounds to help those who could not help themselves, now to come forward to help those men in the several parishes in London who require their help to enable them to procure better and cheaper gas. He might have added, that by so doing the Common Councilmen of the present day would surpass the deeds of their noble-minded predecessors by giving a helping hand to the men who had been plotting for the annihilation of the body whose succour they supplicate. Mr. Beal stated that the delegates rely in support of their Bill on the evidence presented before the committee of last session, and thus, by the adoption of the notice they have given the Corporation, would be enabled to effect important objects not comprised in their own notice. Mr. Bontems, the chairman of the special Gas Committee, supported the petition, which was, after some discussion, referred to that committee to examine into and report to the court, an amendment to the contrary, moved by Mr. Rowe, not having been seconded. The step gained by Mr. Beal and his colleagues cannot well be considered as a step in advance, for the committee could scarcely carry their hostility to the gas companies so far as to recommend a course of proceeding inconsistent with the propositions of the Bill of which the Corporation have given notice, nor would the "noble-minded" present generation of Common Councillors be in the least inclined to draw largely on the Corporation funds for the purpose of improving the supply of gas beyond their own boundaries. The power which the Corporation require Parliament to give them is to purchase the works of the companies which now supply the City with gas, and has nothing in common with the requirement of a compulsory supply of gas of a given quality and price, accompanied by all the stipulations proposed to be made by the committee of last session for the general supply of gas to the metropolis. Whatever may be the recommendation of the special Gas Committee, the Court of Common Council have too much prudence to be led astray to undertake a crusade against the gas companies outside the bounds of the City, especially in opposition to the resolution of the Metropolitan Board of Works that it is better to wait and watch.

We insert in another part of our present number a complete list of the notices that have been given of the introduction into Parliament, during the present session, of Bills relating to the supply of gas and water. Of the gas Bills there are 41, which is rather a smaller number than last session, including the 7 Bills connected with the metropolis, which we have previously noticed; but we miss from the list the mysterious anonymous notice to which we alluded in our last, the promoters of it, whoever they may be, having wisely abandoned the notion of proceeding further. The majority of the other Bills seem to be of the usual character, being promoted by established companies who require additional powers, or by those who have hitherto carried on their works without parliamentary authority. There is, however, the unusually large number of eleven notices of Bills for authorizing the sale and transfer of the works of existing companies to local authorities.

Little can be known of the intentions of the metropolitan gas companies respecting any scheme for amalgamation until after the deposit of the printed copies of bills, for which the 23rd inst. is the last day allowed. We understand that, although a provisional Bill to provide for the amalgamation of the several metropolitan gas companies has been drawn up, there continue to be dissentients to any such scheme, and unless unanimity can be obtained it will have to be abandoned. So far as regards one of the companies, to which we adverted in our last "Circular" as being opposed to amalgamation, it appears, from a letter inserted in another column, from the chairman of the Equitable Company, that we gave a stronger significance to his meaning than his words will strictly bear.

Though not desiring amalgamation with other companies, on the ground that it would not improve the position of his company, he said he would not offer any objection to such a measure, and he stated at the same time that his company were considering how far the suggestions of the committee can be carried out. We regret that the other companies who disapprove of amalgamation are not so willing to yield their opinions to those of the majority, and, under such circumstances, it may not be desirable to risk the severance of union by the introduction of an amalgamation Bill from which some at least of the thirteen companies would withhold their assent. It is essential for all their interests that there should be perfect agreement in action during the struggle in the present session; and it may be expedient, in order to secure that concord, that a Bill should be presented to Parliament embodying all the concessions agreed to by the gas companies in the committee of last session, leaving open for discussion the disputed points. Parliament would thereby have the opportunity of reconsidering the question of the payment of back dividends, on which the Bill failed. In the promotion of such a measure all the companies might be induced to act firmly together, and without such concord their several interests will assuredly be sacrificed in detail.

It is with much satisfaction we observe that a Bill has been introduced into the House of Commons, by Mr. Waldegrave Leslie, having for its object the extension to gas and railway shares of the principle of the Bill passed last session for preventing the unprincipled depreciation of the value of shares in banking companies by fictitious sales. The Bill, which has the merit of being very short, provides that, after the 1st of May next, all contracts and agreements for the purchase of shares in any railway or gas company shall be null and void unless the respective numbers or the names of the proprietors of such shares are designated as entered in the books of the companies, and any person who wilfully contravenes the provisions of the proposed Act is to be considered guilty of a misdemeanour and punished accordingly. It is also provided that railway and gas companies shall be bound to show their lists of shareholders to any registered shareholder during business hours.

The property of gas companies is almost necessarily exposed to be damaged by malicious persons who from any cause may design to do them injury, though it is seldom we have had to record such an instance of the kind as occurred last week at Harrogate. The works of the Harrogate Gas Company are situated upwards of a mile from the town, and during the night of Tuesday last the ground was opened, and one of the mains was completely broken for a considerable length, whereby the entire stock of gas in the holders was lost, and the town was thrown into darkness. The difficulty in which the manager was thrown was partly overcome before the following evening, but the public lamps were not lighted, and a portion of the district usually supplied by the company was cut off. We have not heard that any discontent existed among the workmen to excite them to commit so outrageous an act, the perpetrators of which had not been discovered. The exposure to wanton and malicious damage is of course increased when the works are situated at a distance from populous neighbourhoods; and the proposed removal of the works of some of the metropolis companies to remote localities, would involve the necessity of protecting the mains, otherwise entire districts of the metropolis might on any night be subjected to the same inconvenience as Harrogate was last week.

Coal gas is not to be bound with red tape, and a recent attempt of the War Department to accomplish that impossibility has not done much credit to official wisdom. The discontinuance of the use of gas at the Perth barracks was brought under the notice of the House of Commons on the 28th inst., when it was stated that, in consequence of the diminution of the accustomed light, many of the men who had previously spent their spare time in reading had been induced to frequent the whisky shops and other places in the city. Sir John Pakington, who admitted that such injurious effects had been produced, defended the conduct of the War-Office in discontinuing the supply of gas, on the ground that the price had been raised above the standard of 5s. per 1000 feet, which was the maximum that official regulations allowed to be paid. Had the illuminating power of the gas been examined, it would have been ascertained that the Perth gas, made from the best cannel coal, was cheaper, light for light, at 6s. 8d. per 1000 feet, than London gas at half the price; but it was not in the nature of red tape to go beyond "the hard and fast line" of 5s., whatever might be the quality of the gas. Whether or not 6s. 8d. per 1000 feet, to which the gas had been raised, was a fair price, or whether other large establishments in Perth were charged the same, Sir John Pakington said, in reply to a question from Mr. Bright, it was not his business to ascertain. The price to be paid was the only thing he looked at, without regard to the quality of the article supplied; and, though the barracks at Perth were lighted at actually less cost than most of the barracks in the kingdom, that fact, and the injury to the morals of the soldiers from the diminution of the accustomed illumination, were disregarded, because the light was supplied in a concentrated form not recognized by official regulations. It may be desirable, for the sake of the gas company, to explain the cause of the rise in the price of gas in Perth. Competition by a company got up some years since, under Mr. Flintoff's auspices, compelled the old company to reduce the price to 4s. 2d. per 1000 feet, at which rate the barracks were formerly supplied, but the new company, being unable to continue the supply at that price, the two companies amalgamated, and the charge was raised to a remunerative price, which it was necessary to increase to compensate for the losses previously sustained by the reckless squandering of capital in the construction of unnecessary works.

The contentions in the Town Council of Dundee respecting the proposed purchase and transfer of the works of one or of both the existing gas companies to commissioners, have resulted in giving notices of the intention to introduce into Parliament two Bills; but the differences among the Town Councillors, as to the constitution of the body of commissioners who are to manage the lighting of the town, still continue, and there seems to be little prospect of their coming to an amicable adjustment of the points in dispute.

Correspondence.

METROPOLITAN GAS AMALGAMATION.

SIR,—In the "Circular to Gas Companies," in your JOURNAL of the 26th inst., you say—"The Equitable, by the voice of their chairman, at their last meeting objected to any scheme of amalgamation." If you will kindly refer to the report in your JOURNAL of the 12th inst., of what was said by the chairman on the occasion alluded to, you will, I think, find that it hardly bears the meaning you attribute to it. The passage in question is as follows:—"There was a proposition thrown out by the committee last session that all the companies should be amalgamated, and, though we would rather remain as we are, believing that no plan of that kind could possibly improve our position, we are now considering how far we can carry out the suggestions of the committee, should Parliament think it desirable. It is a matter of very anxious deliberation; we have discussed it over and over again, and we shall use our best endeavours to come to a satisfactory conclusion." Your reporter has given, with his usual accuracy, a very fair, though of course condensed account of what was said; and I submit that it shows, clearly enough, that, though the Equitable, being a prosperous company, content with their position, would rather remain in it; yet, so far from objecting to any plan of amalgamation, they are, in deference to the suggestion of the parliamentary committee and in the interests of the public, as well as in accordance with the resolutions last session of the committee of chairmen and the proposals submitted to the parliamentary committee, actually engaged in considering how the amalgamation can be carried out, and using their best endeavours for a satisfactory conclusion. This, in fact, has been the consistent course of the Equitable throughout. Allow me to add that I quite agree with your conclusions as to the necessity for unanimity and concord among the companies, and for the settlement of the metropolis gas question on a liberal and equitable basis, and have always urged those views.

THE CHAIRMAN OF THE EQUITABLE GASLIGHT COMPANY.

21, *John Street, Adelphi, Nov.* 27, 1867.

LUBRICATORS FOR GAS EXHAUSTERS.

SIR,—One of your correspondents recommends the use of *coal oil* for lubricating exhausters. Perhaps he will be kind enough to state, for the information of gas managers generally, where this coal oil is to be obtained at the price quoted—viz., sixpence per gallon. JAMES RICH.

Devonport, Dec. 2, 1867.

Register of New Patents.

709.—Charles Maschwitz, the younger, of Birmingham, in the co. of Warwich, merchant, for "*Improvements in taps and valves.*" A communication. Provisional protection only obtained. Dated March 12, 1867.

According to this invention the body of the tap or valve consists of a chamber divided into two parts by a horizontal plate or diaphragm, the entrance-pipe opening into the upper and the exit-pipe opening into the lower chamber. In the plate or diaphragm separating the two chambers is an opening constituting a valve-seat, and upon the said opening is a flap or valve of leather or other flexible material. A short metal rod passes through the said flap or valve, and terminates in a convex head on the under side of the said flap or valve. This short rod is fixed to the valve by a screw, and between the screw-nut and the leather a thick plate of metal may be placed of larger size than the area of the valve-seat. This plate of metal on the upper side, and the head of the metal rod on the under side of the flap or valve, give the required weight and rigidity thereto. In the lower chamber or division of the tap or valve is a horizontal axis, situated a short distance below, and crossing the valve-seat. The axis projects from the tap or valve-case on one side, and is provided with a handle by which it may be turned. Upon the axis, and immediately under the flap or valve, an eccentric is fixed. By turning the axis, the eccentric may be made to act upon the metal head on the under side of the valve, and lift the same. The liquid can now pass from the upper chamber to the lower chamber, and escape by the exit-pipe of the latter. By turning the axis until the eccentric no longer bears against the flap or valve, the latter falls by its own weight, and is held tightly to the valve-seat by the pressure of the superincumbent liquid. Instead of the flat flap or valve described, a spherical or ball valve may be employed. In this case a circular valve-seat is made in the plate or diaphragm of the tap or valve for the reception of the spherical or ball valve.

720.—Thomas Walker and Thomas Ferdinand Walker, both of Birmingham, in the co. of Warwick, engineers, for "*Improvements in apparatus for measuring the passage or flow of liquids.*" Patent dated March 13, 1867.

These improvements relate to actuating the valve-motion for changing the direction of flow of the liquid to be measured as it passes into and from the measuring-chambers, by the use of wedge-formed surfaces or double inclines or surfaces, acting as such, with a stud or roller and spring or weight pressure governed by lever-motion from the piston or diaphragm between the measuring compartments.

721.—John Hamilton, of Glasgow, in the co. of Lanark, N.B., for "*An improved artificial material for producing gas to be used for illuminating purposes.*" Patent dated March 13, 1867.

This invention consists in combining and admixing ground or screened bituminous coal with tar or pitch resulting from the manufacture of stearine or other residua of palm oil or lard, or other vegetable distillations, which mixture or compound is to be used for the production of illuminating gas. These residua may be either used separately or together in the following proportions—viz., from 20 to 40 gallons of residua to one ton of finely ground or pulverized bituminous coal. This admixture is ultimately combined, either in a hot or cold state, in a pug-mill or other suitable commingling machine, and it is advantageous to allow the compound after being mixed to remain undisturbed for 24 hours, or thereabouts, before being placed in the retorts for distillation, as by being allowed to settle a more complete admixture of the ingredients will result.

722.—William Edward Newton, of 66, Chancery Lane, in the co. of Middlesex, civil engineer, for "*Improvements applicable to the ventilation of theatres, churches, and other large buildings, and in purifying and cooling the air supplied thereto.*" A communication. Provisional protection only obtained. Dated March 13, 1867.

The method by which these improvements are effected is by the aid of sponges, wool, horsehair, or other suitable porous substances. The apparatus may be constructed in the following manner:—Within a box or framework is placed a wire cage, the interstices of which are sufficiently large to admit of the free passage of air. This cage is filled with sponge, wool, or other suitable substance, which is kept saturated by means of water or other liquid conveyed to the cage (and allowed to spread itself over the sponge or other substance) by means of perforated tubes. On the opposite side of the cage is fixed a fan for the purpose of exhausting the air from the cage, and thus keeping up a current of air. This fan communicates with the cage by means of a branch pipe. In order to prevent the sponges from settling down and lying flat, they are kept in their places by means of coiled steel springs. The liquid to saturate the sponge is supplied from a reservoir or cistern placed above the apparatus, so that when a cock is turned on the water or other liquid will naturally force itself through the sponge or other suitable substance.

729.—James Conyers Morrell, of Leyland, in the co. of Lancaster, for "*Improvements in apparatus applicable to dry closets for disinfecting and deodorizing and preparing manure, parts of which are applicable to the separating of cinders from ashes.*" Patent dated March 13, 1867.

This invention has for its object certain improvements applicable to the class of closets known as dry closets, and by which the whole of the unconsumed cinders are saved. The details of the improvement are too lengthy for insertion, but the novel features of the invention consist, first, in the construction of the closet seat orifice cover, fitted and worked as described; secondly, in the application of a moveable circular or other screen or riddle, agitated or revolved as described, for the more perfect separation of ashes from cinders, and delivery of the same by motion communicated during the use of the closet or by self-acting mechanism; third, an improved ash measuring and discharging apparatus; fourth, the use of disinfectant measures and dischargers; and fifth, the arrangement of drying floors in the manufactory for the preparation of manure from the contents of the closet.

753.—Nathan Thompson, of 15, Abbey Gardens, St. John's Wood, in the co. of Middlesex, for "*Improvements in connecting the ends of pipes and tubes.*" Patent dated March 15, 1867.

For the purpose of this invention a flange or surface is fixed or formed around the extremity of each of two pipes or tubes to be connected, and by pressing these flanges or surfaces towards each other, an elastic ring or washer being inserted between them, the required joint or connexion is made. A rim is formed in connexion with the flange or surface at the end of each pipe or tube; it passes about half round its outer edge, and when the pipes or tubes are put together, the rims may support the elastic ring or washer all round, and prevent its being forced outwards by the pressure of the contents of the pipes or tubes; or the elastic ring or washer may be fitted into a groove. The two flanges or surfaces are pressed the one towards the other by two cams or eccentrics, carried by lugs on opposite ends of the rim of one of the flanges. The cams or eccentrics turn upon studs fixed in the lugs, and they are connected with one handle by means of which they may be moved simultaneously. The arrangement is such that when the handle lies along close against one of the pipes or tubes, and parallel to it, the cams or eccentrics carried by this pipe or tube are so turned as to bear firmly on the back of the flange or surface in connexion with the other pipe or tube, and they may enter small hollows or recesses therein, and the elastic ring or washer between the two flanges or surfaces is then strongly compressed, and so the joint or connexion is made. When, however, the handle is turned down, so as to project at right angles to the pipes or tubes, the cams or eccentrics are so placed as to relieve the pressure on the flanges or surfaces, and the pipes or tubes may then be separated the one from the other.

755.—William Robert Lake, of 8, Southampton Buildings, Chancery Lane, in the co. of Middlesex, consulting engineer, for "*Improvements in rotary engines and pumps.*" A communication. Patent dated March 15, 1867.

This invention relates to that class of rotary engines and pumps in which use is made of pistons arranged to rotate on two separate shafts in connexion with each other, in a casing formed by the intersection and junction of parallel cylinders, in which casing all of the interior surfaces of the said cylinders are preserved, except such as are removed by their intersection; so that the whole casing, considered as a unit, is not unlike an oval, or an approximation to an ellipsis, in having inward projections in the line of its minor or conjugate diameter. The invention consists partly in the combination with such a casing of two rotating shafts, with pistons therein, having the following peculiarities of arrangement and form of construction—viz., an arrangement of two or more pistons upon each of the two shafts of an engine or pump in such manner that a substantial balance of the pistons is obtained as respects their weight and momentum, and the pressure exerted thereupon to force them radially outwards against their casing; and a construction of each of the said pistons with surfaces of considerable area concentric with the axis of their rotation, when such surfaces are joined by curves of such form as will ensure contact of the surface of one piston, with the surfaces of the other piston which may be adjacent thereunto, in the operation of the machine.

762.—John Grundy, of Wolstenholme Hall, in the co. of Lancaster, for "*Certain improvements in apparatus applicable for the prevention of smoke.*" Patent dated March 16, 1867.

This invention is designed for the introduction of heated air behind the fire-bars, and there to supply a strong heat-radiating surface, so that the combustion of such air with the gaseous and combustible portions of the smoke arising from the furnace may be consumed in their passage over such surface. The improvement consists in the use of a chamber, made of fire-clay, which is fixed on brickwork or supports in the position, and forming part of the ordinary bridge in the furnace flue, the fire-bars abutting up against such chamber. This chamber is enclosed on all sides excepting a longitudinal slot at the bottom of the face or front where the fire-bars meet it, and the front edge of the bottom of the chamber has a series of grooves sloping from back to front to supply air from beneath the bars to the interior of the chamber, which air becomes heated by passing through such chamber, and escapes through the perforations in the roof into the flue, where, mixing with the smoke, it assists in effecting the combustion thereof.

777.—Henry Justinian Newcome, of 49, King William Street, in the City of London, for "*Improved apparatus for warming or heating buildings.*" Provisional protection only obtained. Dated March 18, 1867.

To the top of a close stove is affixed a short upright pipe serving as the flue of the stove. To this pipe is connected horizontally two, four, or more circular hollow boxes, each fitted with a sliding damper which is placed at an angle sideways, so that the edges of the damper shall touch or nearly so the top and bottom of the said box, and at the same time leave a free passage for the smoke to pass up the pipe or flue aforesaid into the box when the damper is pushed over the opening or open end of the said flue, thus compelling the smoke and heat to circulate in the said box; and pass thence into the next uppermost box, and so on through each box, thereby heating the entire surface of each, and the air which comes into contact therewith. When all the dampers are pulled outwards the smoke and heat will then pass direct up the chimney or flue and not circulate in the aforesaid boxes, so that according to the extent to which the dampers are pulled out or pushed in so as to cover or uncover the openings in the flue more or less, the temperature of the room in which the apparatus is may be regulated.

788.—Alfred Henry Hart, of 22, Gresham Street, in the City of London, manufacturer, and William Parry, of Birmingham, in the co. of Warwick, mineral surveyor, for "*Improvements in treating*

or purifying sewage, and in apparatus to be used for that purpose." Patent dated March 19, 1867.

These improvements consist in mixing with sewage, clay, iron ore, or manganese earths for the purpose of precipatating the suspended and dissolved organic and inorganic matters contained in the said sewage, and in the apparatus employed for carrying out such improvements.

790.—JAMES HISLOP, manager of the Gas-Works, Ayr, N.B., for "*Improvements in the arrangement of apparatus for 'scurfing' or removing carbon from gas-retorts.*" Patent dated March 19, 1867.

This invention consists in laying, parallel to the front of the retort-beds, a line of cast-iron pipes, suitably jointed together, of about 8 inches diameter, more or less, one end of which may be closed, while the other is connected to the main flue leading to the chimney-shaft; or both ends of the line of pipes may be led into the main flue, if found more advantageous. For convenience sake it is preferred to lay them beneath the retort-house floor, but this is not indispensable. The pipes so laid are constructed with a number of sockets cast on their sides, and are so adjusted that one shall be opposite to and directly under each retort, with its open end upwards. These sockets are provided with caps, so as to exclude the admission of atmospheric air, and are kept closed when the apparatus is not in operation, but admit of removal when required.

When the apparatus is to be put into use, a piece of pipe, of nearly sufficient height to reach the retort, is inserted perpendicularly in the socket immediately beneath it; and, the lid of the retort to be operated upon having been removed, a pipe long enough to reach within about a foot of the back end thereof is thrust into it, and the outer end connected by a bend to the upright pipe before mentioned. The whole line of piping, from the back end of the retort to the main flue, is then in direct communication. The consequence is, that the draught in the chimney-shaft induces a strong current of air to rush into the retort, which, as it passes, causes the particles of carbon to fly off; and in the course of a very short time, by this means, the whole of it may be removed.

791.—MATTHEW SEMPLE, of Axminster, in the co. of Devon, gentleman, for "*An improved mode of and apparatus for warming and ventilating buildings.*" Provisional protection only obtained. Dated March 19, 1867.

The object of this invention is to warm several apartments or rooms from one and the same fireplace. For this purpose the inventor constructs, at the back and sides of or in close proximity to a stove, kitchen-range, or other fireplace in a lower apartment of the building, an air-tight casing or chamber, into which air is conducted by pipes communicating with the outer atmosphere, or otherwise. These pipes may, if required, be carried through or round the fireplace before reaching the casing. Other pipes from the casing are led up the flue, or otherwise, and into other rooms or apartments of the building, where they are furnished with valves or taps. The air which enters the casing becomes heated by the fireplace, and, passing up the outlet-pipes, may be allowed to issue into one or more of the other rooms as required, by opening the valves or taps in those rooms.

802.—PAUL THOMAS GOODWIN, of Camden Street, Camden Town, in the co. of Middlesex, engineer, for "*Improvements in apparatus for driving revolving retorts and cylinders.*" Provisional protection only obtained. Dated March 20, 1867.

This invention consists in certain improvements whereby revolving retorts and cylinders, such for example as those which are frequently employed for reburning animal charcoal, and in which the weight of the retort or cylinder and its contents is borne by antifriction pulleys or rollers, are actuated and rotated with greater facility and simplicity than has been previously done. In actuating such retorts or cylinders the motive power has hitherto been applied to the retort or cylinder itself by shafting or otherwise, the antifriction rollers which are placed at either end thereof being used to support the weight and to facilitate the revolution of the retort or cylinder by means of the motive power so applied as before mentioned. Instead of so actuating the retort or cylinder, the motive power is applied direct by the well-known means to one or more of the pulleys or rollers, the surface or surfaces of which work against the surface of the retort or cylinder which is so arranged.

819.—JAMES GREENSHIELDS, of Glasgow, in the co. of Lanark, N.B., for "*An improved compound or combination of materials to be used for the production of illuminating gas.*" Patent dated March 21, 1867.

This invention has for its object the utilization of certain animal, vegetable, and mineral substances for forming a compound to be afterwards used, either by itself or in combination with shale or other carbonaceous material, for the production of illuminating gas, and consists in admixing together the following substances—viz., resin, pitch, oil (otherwise known as dead oil or heavy oil), paraffin oil or paraffin tar, and paraffin in other forms, petroleum, animal tar with an alkali, being either potash, soda, or lime, or any other alkali, earth, or metallic oxide capable of saponifying and making a soluble or insoluble compound as required. The substances to be saponified are boiled together with an alkali, and, after being completely commingled, the resulting liquid is allowed to cool, when in a short time it will be solidified, and is easily formed into blocks or lumps of any convenient form or size, which are particularly applicable for storeage or shipment.

823.—WILLIAM LORBERG, of Danvers Street, Chelsea, in the co. of Middlesex, for "*Improvements in the construction of urinals, water-closets, and other similar vessels.*" Provisional protection only obtained. Dated March 21, 1867.

The design of this invention is the more effectual prevention of noxious effluvia from urinals, water-closets, and other similar vessels. As regards urinals, it is proposed to adapt thereto a box formed of any suitable material, and provided with a perforated lid or top, or other arrangement, as particular circumstances may require. This box is filled with charcoal in small lumps, preferably tan charcoal, and is connected by a conduit-pipe with the drain or sewer. The urine, in its passage to the drain or sewer, is filtered through the charcoal, by which means it becomes deodorized, and the urinal is preserved inodorous without the necessity of running a constant stream of water through it or using any other disinfectant.

In water-closets, it is proposed to adapt, either at the bottom or top of the pan, or around or about the same, a receiver to contain charcoal, by preference tan charcoal. The flushing of the pan will carry off the contents of the pan, and the vapours, as they arise, will be absorbed, and thereby rendered inodorous. When the charcoal becomes exhausted, which does not take place till after the lapse of a considerable time, it is only necessary to pass a current of water or very weak acid, by preference hydrochloric acid, and water through it, by which it will be revivified, or it may be replaced by a fresh supply.

827.—GEORGE HASELTINE, of 8, Southampton Buildings, Chancery Lane, in the co. of Middlesex, civil engineer, for "*An improved steam heating and ventilating apparatus.*" A communication. Patent dated March 21, 1867.

The object of this invention is, by the utilization of exhaust steam from an engine, and the employment of a slight fraction of the power developed by the said engine, to obtain, for the purpose of heating and ventilating, currents of pure air. The said invention consists, chiefly, in the employment of certain devices arranged and operating in the following manner:—A closed vessel, by preference of a cylindrical form, is provided, with tubes which extend through the heads of the said cylindrical vessel, and terminate at their ends in closed air passages. The said vessel receives amongst these tubes the exhaust steam from a larger pipe than the one which affords an outlet to any steam which may be uncondensed, and a waste-pipe is provided for conducting away the water produced by the condensation of the steam inside the cylindrical vessel. Connected with an air-passage at one end of the said tubes is a fan or other blowing apparatus for causing air to pass through the tubes, so as to condense the steam in contact with the exterior of the said tubes and receive heat therefrom. From the other end of these tubes the heated blast is conducted horizontally or otherwise as may be desired. The blowing apparatus may be driven by a belt from the engine from which the exhaust steam is taken. Air may be taken into the said blowing apparatus from any part of the building in which the same is situated, or from the external atmosphere.

833.—JOHN HATHORNTHWAITE WINDER, of Sheffield, in the co. of York, manufacturer, for "*An improved rotary pump for raising or forcing fluids.*" Provisional protection only obtained. Dated March 22, 1867.

This improved rotary pump is obtained by the employment of a screw or part screw of one or more threads or wings applied upon an axis to work within a cylindrical case. The case is provided with an inlet passage at one end or side thereof, and an outlet passage at another. Each thread or part thread or wing, or a portion thereof in succession, makes contact with the inlet passage, and these parts of the threads or wings may, if desired, be provided with suitable packing. The apparatus may be placed horizontally, vertically, or otherwise, and be worked by hand or power. Valves may be applied to the inlet and outlet passages when necessary. In adapting this pump for the free passage of thick or muddy substances, the inventor makes the screw and cylinder to revolve together with an outer case.

836.—JOSEPH WHITLEY, of the Railway Brass-Works, Leeds, in the co. of York, for "*Improvements in stop-valves or taps for steam and water.*" Patent dated March 22, 1867.

According to this invention a valve or tap in which the inlet and outlet pipes are at right angles to each other is constructed in the following manner:—The body or shell for the valve or tap has a socket on one side, which is tapped with a screw-thread to receive one of the pipes. At one end of the body there is another socket of larger size also tapped with a screw-thread, and it receives a screw-plug through which a passage is formed and tapped to receive the other of the two pipes. A valve-seat is formed or mounted on the plug at its inner end, and the valve to close the passage through the plug is formed to work in or is carried at the end of a spindle which passes out at the other end of the body and has a screw-thread cut upon to receive the cap of the stuffing-box. The spindle which carries or holds the valve in position passes out through the cap, and has a screw-thread upon it, and a corresponding thread is cut in the passage through the cap. Thus, by turning the valve-spindle by means of a wheel or handle applied at its outer end, it can be screwed in or out through the cap, and in this vay the valve is removed from its seat or forced firmly against it. Where the inlet and outlet pipes are in one straight line, the arrangement is similar, except that the sockets on the side of the body, and in the screw-plug at the end thereof, are set at a suitable inclination to the passage through the body or shell.

860.—WILLIAM MATTHEWS, of Tipton, in the co. of Stafford, for "*An improved means of draining mines, coal-pits, and other places from whence it is desired to raise water.*" Provisional protection only obtained. Dated March 25, 1867.

One part of this invention consists in providing a double-action force-pump which is placed in a proper position at the bottom of the shaft. This pump may be worked by any motive power it is convenient to employ, but by preference steam power is employed; and in the description hereinafter contained steam power is supposed to be referred to. The engine and boiler, and all the apparatus which supplies the motive power, are placed below the surface, by preference at the bottom of the shaft. The advantage of this obviously will be that, for the same amount of force now employed, three or four times the quantity of water may be raised by reason of the whole motive power being brought to bear directly upon the object it is sought to

attain, instead of its being partially absorbed by the connecting-rods and other like cumbersome apparatus which form a necessary part of the present system of draining. Attached to and communicating with the pump is the outlet-pipe by which the water is carried to the surface, and which may be arranged as usual, though the inventor proposes it shall be of lighter construction, and so made at a less cost than the pipes now used for this purpose.

865.—Alexander Parkes, of Birmingham, in the co. of Warwick, for "*Improvements in coating metal tubes and rods, to render them suitable for use for many ornamental purposes.*" Provisional protection only obtained. Dated March 25, 1867.

In coating metal tubes and rods according to this invention, "parkesine" is employed, which is pyroxylin compounded with solvents and oils; and for this purpose the parkesine is hardened and coloured by employing in its preparation a large per centage of a mineral powder and pigment.

902.—Angus Mackenzie, of 106, Capel Street, in the city of Dublin, plumber, and Samuel Robinson, of 52, Brunswick Street, in the city of Dublin aforesaid, foreman builder, for "*Improvements in apparatus to be applied to cisterns for preventing waste of water.*" Provisional protection only obtained. Dated March 28, 1867.

In applying this invention to water-closet cisterns, a closed chamber is constructed inside the cistern, at the lowest part thereof, of sufficient gauge and capacity to contain the requisite amount of water for one flushing of the closet. A small aperture, which is left constantly open, is made in the side of this chamber for the purpose of filling the same from the surrounding water in the cistern. At the bottom of the gauge-chamber there is fitted the valve-seat and valve, opening either into the old service-box or into a supply-pipe leading direct to the basin. This valve is provided with a tubular spindle, having a piston working therein, such piston being connected to a float inside the closed chamber before referred to, and on the lower part of the piston is formed a valve-cap, and on the upper part of the tubular spindle through which the piston works there is formed a valve-seat, so that, when the piston is raised by the float to a given height, the second passage for water—namely, the passage through the tubular spindle—is closed, and remains closed until, by the opening of the principal valve, the chamber is emptied. This piston is further coupled by a wire to the usual overhead weighted lever, which is connected to the "pull" or handle of the closet. The object of the entire arrangement is, first, to admit the full complement of water in the closed chamber to pass down through the principal valve when opened; and, secondly, to permit of a certain gauged or regulated quantity of water, sufficient to fill the pan of the closet, to descend through the tubular spindle of the main valve after it has been closed.

904.—William Bryer Nation, of 394, Old Kent Road, in the co. of Surrey, for "*Improvements in engines worked by steam, water, and other fluids and gases under pressure.*" Provisional protection only obtained. Dated March 28, 1867.

This invention consists in constructing engines to be worked by steam, water, and other fluids or gases of a flexible and compressible tube, or tubular passage, rendered fluid or steam tight, and communicating at one end with the steam-boiler or other reservoir of fluid or gas under pressure, and at the other end either with the atmosphere or with a condenser or other receptacle or space into which the said fluid or gas may be made to pass after having done its work. This tube is fixed upon a bed, by preference formed as part of a circle, and two or more arms fixed radially to a shaft, the centre of which corresponds with the centre of the curvature of the circular bed, are made to compress the said tube at certain points in such a manner that the steam or water on entering the tube behind one of the said arms will force the latter forward, and thus cause the shaft to which it is attached to revolve. When the one arm has arrived near the exhaust end of the tube, the other commences to compress the tube at the inlet end, and is in like manner forced round by the pressure of the steam or water. If it be desired to work the steam expansively, this may be effected by providing the inlet-pipe with a valve actuated by an eccentric or cam upon the engine-shaft, in such a manner as to cut off the supply of steam when the arm has passed over any fractional portion of the length of the tube, so that the steam acts expansively in forcing the arm over the remaining portion thereof. The arms are by preference provided with rollers at their ends, in order to avoid the friction thereof against the tube.

915.—Matthew Piers Watt Boulton, of Tew Park, Oxfordshire, esquire, for "*Improvements in apparatus for receiving motion or energy from fluids and for imparting it to them, and in the propulsion of vessels, and apparatus to be used for that purpose.*" Patent dated March 28, 1867.

Among the features of this invention are the following:—Rotary instruments suitable for being worked by water or fluids are constructed according to this invention as follows:—A chamber similar in form to the wheel known as a reaction wheel is fixed and acts as a guide. It may have several spiral passages, or only one. Water entering under pressure, the spiral passage or passages acquires within the chamber a vertical movement, and issues with this movement at the neck or central orifice of the chamber. Passing through this it enters the neck or central part of a wheel, which it turns, acting both by pressure and impulse. This wheel may have the form of the guides of a Fourneyron turbine, when these are made with double curvature. Or it may have the form of a reaction wheel—viz., a hollow disc with spiral outlet passages at the circumference.

Another construction of turbine is as follows:—Water passes through the guides of a Fourneyron or outward flow turbine, and issues from them as a vortex. It enters a spiral revolving chamber similar in form to that which acts as a guide in the inward flow turbine. It issues from an orifice at the end of this spiral chamber, which may have the form of the contracted vein, causing the spiral chamber to rotate. A revolving chamber may be employed with several spiral arms and orifices. Or the channels of the guides may be divided into several compartments, each opening into a separate spiral chamber, the mouths of discharge of the chambers being at different parts of their circumference, while they all rotate together. Again, the chamber into which the fluid issues may have the form of a reaction wheel.

928.—Eugene Canton, of La Rochelle, in the empire of France, for "*A counting and controlling cock for liquids.*" Provisional protection only obtained. Dated March 29, 1867.

This apparatus is composed of a bucket enclosed in a casing furnished at its lower part with a spout. A cylinder, having two horizontal and diametrically opposite slits, is fixed to a part of the bucket, and the extremity of this cylinder is pierced with a circular hole, in which the spindle of a cock penetrates. The opposite side of the bucket is provided with a small shaft, which, passing through the casing, sets the meter or register at work. The bucket possesses at its fore-part a small elastic pad, which, in the tipping of the bucket, strikes against a rod covered with india-rubber, and traverses the casing. This rod has for object to limit the journey of the bucket, and the pad fixed to this latter to deaden the shock against the rod and avoid noise. A similar pad is placed in the interior at the top of the casing, and for a similar purpose. A cock, fixed to the casing, permits the introduction of the liquid into the cylindrical chamber, which may be in the cylinder of the bucket, and, like this latter, possesses two openings or slits of the same dimensions, and arranged in like manner. The cock being open and the bucket at rest, the liquid passes into the chamber, and by openings therein arrives at the bucket, which, filled to a level fixed by the float, falls over in the casing, sets the clockwork in motion, and of itself resumes its original position. This return movement of the bucket is rendered instantaneous by a counterweight placed at its lower part.

APPLICATIONS FOR LETTERS PATENT.

3318.—Peter Salmon, of 6, Great Smith Street, Westminster, in the co. of Middlesex, engineer, for "*Improvements in the manufacture of gas, combined with its application as a motive power in engines previous to its being burned or consumed, in generating steam in boilers for the same, or for lighting, cooking, warming, and other purposes.*" Nov. 23, 1867.

3333.—Thomas Chalmers, of the city of Glasgow, now residing in the city of New York, U.S.A., for "*Improvements in machinery for producing seamless tubes.*" A communication. (Complete specification.) Nov. 25, 1867.

3353.—Milton Alexander Hamilton, of Detroit, Michigan, U.S.A., now of 8, Southampton Buildings, Chancery Lane, in the co. of Middlesex, for "*Improvements in lamp-burners.*" Nov. 26, 1867.

3361.—James Sutcliffe Smith, of Bacup, in the co. of Lancaster, manufacturer, for "*Certain improvements in apparatus for ventilating buildings and other similar purposes.*" Nov. 27, 1867.

3369.—Matthew Henry Larmuth and Luke Hamilton Larmuth, of the firm of Thomas Larmuth and Co., of Salford, in the co. of Lancaster, engineers, for "*Improvements in water-meters and water-power engines.*" Nov. 28, 1867.

3397.—John Joseph Parkes, of London Street, Paddington, in the co. of Middlesex, gas engineer, for "*Improvements in the means of ventilating rooms and buildings, and in apparatus for the same.*" Nov. 29 1867.

3404.—Samuel Edward Tyrrell Steane, of Barking, in the co. of Essex, soap manufacturer, for "*Improvements in globes and glasses for the transmission of artificial and other light.*" Nov. 30, 1867.

3415.—Edward Price, engineer and manager of the Hampton Court Gas Company's Works, Hampton Wick, in the co. of Middlesex, for "*Improvements in apparatus for regulating the supply of gas to burners.*" Dec. 2, 1867.

3430.—John Hays Wilson, of the firm of John Hays Wilson and Co., of Liverpool, in the co. of Lancaster, brassfounders and ships ironmongers, for "*Improvements applicable to water-closets and pumps connected therewith, which latter improvements are applicable to lift-pumps generally.*" Dec. 3, 1867.

3451.—Edward Thomas Hughes, of the firm of Hughes and Son, of 123, Chancery Lane, London, patent agent, for "*An improved lighting, heating, and cooking apparatus, part of which is applicable to other purposes.*" A communication. Dec. 4, 1867.

3466.—Arthur Charles Sterry, of Woodgate Cottage, Ewell, in the co. of Surrey, for "*Improvements in engines worked by heated air or gas.*" Dec. 5, 1867.

GRANTS OF PROVISIONAL PROTECTION.

3110.—Herbert Allman, of Ampthill Square, in the co. of Middlesex, civil engineer, and Frederic Newton Gisborne, of 445, West Strand, in the said co., civil engineer and electrician, for "*Improvements in apparatus to be applied to lamps and burners for the more perfect combustion of carburetted gases.*" Nov. 5, 1867.

3219.—Alfred Vincent Newton, of 66, Chancery Lane, in the co. of Middlesex, mechanical draughtsman, for "*Improvements in rotary engines applicable as motors, pumps, meters, and for other purposes; also in indicators applicable to such and other engines or meters, and other purposes.*" A communication. Nov. 13, 1867.

3225.—Richard Harrison, of 7, Sackville Place, in the city of Dublin, brassfounder, for "*Improvements in cocks or taps.*" Nov. 14, 1867.

3228.—Levi Alfred Wainman, of Leeds, in the co. of York, engineer, for "*Improved apparatus for raising water.*" Nov. 14, 1867.

3237.—William Edward Gedge, of the firm of John Gedge and Son, of 11, Wellington Street, Strand, in the co. of Middlesex, patent agent, for "*An improved gas-engine.*" A communication. Nov. 15, 1867.

3245.—Richard Howson, of Middlesborough-on-Tees, in the co. of York, engineer, for "*An improved gas-furnace.*" Nov. 15, 1867.

3304.—Ebenezer William Hughes, of Queen Square, Westminster, for "*Improvements in rotary engines and pumps.*" Nov. 21, 1867.

3305.—Henry James and Edward Dreweit, of Weybridge, in the co. of Surrey, for "*Improvements in water-closets.*" Nov. 21, 1867.

3353.—Milton Alexander Hamilton, of Detroit, Michigan, U.S.A., now of 8, Southampton Buildings, Chancery Lane, in the co. of Middlesex, for "*Improvements in lamp-burners.*" Nov. 26, 1867.

INVENTION PROTECTED FOR SIX MONTHS BY THE DEPOSIT OF A COMPLETE SPECIFICATION.

3333.—Thomas Chalmers, of the city of Glasgow, now residing in the city of New York, U.S.A., for "*Improvements in machinery for producing seamless tubes.*" A communication. Nov. 25, 1867.

NOTICES TO PROCEED.

2045.—Frederick Wilkins, of 20, York Buildings, Adelphi, in the co. of Middlesex, civil engineer, for "*Improvements in apparatus for producing or increasing the light or heat from carbonized atmospheric air, gas, or gaseous mixtures, by the use of hydrocarbons, oils, spirits, or other inflammable liquids, or any mixture thereof.*" July 12, 1867.

2133.—Henry Lea, of Birmingham, in the co. of Warwick, mechanical engineer, for "*Improvements in taps or valves.*" July 22, 1867.

2173.—Edmund Smith, of the free town of Hamburg, Germany, gas-meter manufacturer, for "*Improvements in gas-regulators.*" July 26, 1867.

2180.—Paul Alexandre Rohart, of Rue du Canteleux, Douai, in the Département du Nord, in the empire of France, gentleman, for "*Improvements in the manufacture of gases for the production of light, heat, and motive power, and in apparatus for that purpose.*" July 27, 1867.

2408.—Alexander Melville Clark, of 53, Chancery Lane, in the co. of Middlesex, for "*Improvements in apparatus for raising water or other liquids by steam power.*" A communication. Aug. 22, 1867.

2618.—Thomas Bell, of Hampstead, in the co. of Middlesex, for "*Improvements in treating the oxide of iron residues of gas purifying, in order principally to extract sulphur therefrom.*" Sept. 17, 1867.

APPLICATION FOR PROLONGATION OF PATENT.

142.—Alexander M'Dougall, for a prolongation of the term of the Letters Patent granted to Robert Angus Smith and the said Alexander M'Dougall, for "*Improvements in treating, deodorizing, and disinfecting sewage and other offensive matter, which said improvements are also applicable to deodorizing and disinfecting in general.*" Jan. 20, 1854.

Parliamentary Intelligence.

HOUSE OF COMMONS.

THURSDAY, Nov. 28.

DISCONTINUANCE OF GAS AT PERTH BARRACKS.

Mr. Bayley Potter asked the Secretary of State for War, "whether it is a fact that the use of gas as a means of lighting has been discontinued at the Perth barracks; and if so, whether he has any objection to state the reasons for the change? And whether he is aware that, in consequence of the diminution of light resulting from the change, many men who had previously spent their spare time in reading and other amusements inside the barracks are now induced to frequent the whiskey-shops and other similar places which abound in Perth?" He said he might, perhaps, be allowed to explain that since the notice had been placed on the paper the honourable member for Perth had been in communication with the authorities on the subject.

Sir J. Pakington: It is quite true, as the honourable member has said, that my attention has been called to this subject by the honourable member for Perth. I am sorry to say that the supply of gas has been discontinued at the Perth barracks on account of the very high price asked for gas by the gas company of that town. For a considerable time gas was supplied to the barracks at 4s. 2d. per 1000 feet, but the price now asked is 6s. 8d., in consequence, as I am informed, of the company having amalgamated with a rival company. The War-Office has never given more than 5s. per 1000 cubic feet, and that sum was offered to and declined by the company at Perth. Under these circumstances we did not feel justified in paying this unusual price that was asked for supplying the soldiers with gas. I am sorry to say, with reference to the last part of the honourable member's question, that I am afraid that in the first instance some of the soldiers did go elsewhere for amusement in consequence of the change; but I have done all in my power to check that evil. I have given directions that an additional supply of fuel should be provided until some other efficient mode of lighting is resorted to.

Mr. Bright: May I ask whether the charge made for the barracks is different from the charge made to other large establishments in the town, and to factories, of which there are some in the neighbourhood? I do not understand why the Government should be supplied with gas at a cheaper rate than it is supplied to private individuals.

Sir J. Pakington: I really have not made it my business to ascertain what is the price charged to other establishments. I have rather regarded it as a question whether we should be justified in paying a higher price at Perth than we pay in any other part of the kingdom, which has never been more than 5s.

NOTICES GIVEN FOR PRIVATE BILLS RELATING TO THE SUPPLY OF GAS, WATER, &c.

Barrow-in-Furness Corporation.—Powers to the corporation to light with gas and to supply with water the borough of Barrow-in-Furness and certain neighbouring townships; to purchase the undertaking of the Furness Gas and Water Company; dissolution of that company; authorizing the application of certain funds by the Furness Railway Company; maintenance of existing gas and water works; construction of new works; powers for sewage, drainage, cleansing, lighting, and improving of the borough; purchase of lands, compulsorily and otherwise; sale or lease of lands; powers to levy new tolls, rates, and duties, general and special; powers to raise money by borrowing; and other purposes; amendment of Acts.

Blaenavon Gas.—Incorporation of company; cancellation of Articles of Association; powers to maintain, renew, and extend gas-works, and to light and supply with gas the town of Blaenavon and other places adjacent; extension of limits of supply; increase and regulation of capital; and other powers.

Blaenavon Gas, Water, and Market.—Incorporation of company; purchase and maintenance of existing gas and water works and market; power to supply gas and water and hold a market; purchase of lands and houses.

Borough of Portsmouth Water-Works.—Further money powers; amendment of Acts.

Borough of Portsmouth Water-Works.—Maintenance of certain existing works; additional works and lands, and sources of supply; further money powers; amendment of Acts.

Bradford Water-Works and Improvement.—Extension of limits of water supply; construction of new water-works, and compulsory taking of lands and streams; better protection of sources of water supply, and prevention of pollution thereof; enlargement of powers for enforcing rates and charges; better regulation of the taking, use, and sale of water, and laying down of pipes and conduits; borrowing of additional capital; provisions for liquidation of moneys borrowed and to be borrowed; improvement of becks and watercourses and removal of obstructions; amendment of sanitary powers of the corporation; incorporation of general Acts; repeal, alteration, and amendment of Acts.

Brentford Gas Company.—Amendment or repeal and consolidation of Acts; dissolution and reincorporation of company; regulation and increase of capital; purchase of additional lands, and construction of additional gas-works; manufacture and sale of gas and residual products; extension and alteration of limits of supply; arrangements with other companies, &c.

Brompton, Chatham, Gillingham, and Rochester Water-Works Company.—Increase of capital; amendment of Act; and other purposes.

Burslem and Tunstall Gas.—Increase of capital; sale of superfluous land; amendment of Act.

Calverley and Horsforth District Gas.—Dissolution of Calverley Gas Company, Limited, and Horsforth Gas Company; incorporation into a company of the proprietors of the dissolved companies and other persons; money powers; power to light with gas the township of Calverley-cum-Farsley, in the parish of Calverley; the townships of Horsforth, Carlton, Yeadon, and Rawden, in the parish of Guiseley; and the township or village of Cookridge, in the parish of Addle, all in the West Riding of Yorkshire; power to new company to hold and purchase lands; rates; agreements with other corporations and persons; and other purposes.

Chichester Gas.—Incorporation of company; powers to make and maintain gas-works, and to light parishes and places within and adjoining the city of Chichester; purchase of existing works; rates and charges; agreements.

Chichester Water.—Incorporation of company; construction of works; supply of water to the city of Chichester and adjacent places, all in the county of Sussex.

Chippenham Water-Works.—Incorporation of company; to construct and maintain works; acquirement of lands and appropriation of certain springs and streams; to construct and maintain mains, pipes, culverts, &c.; levying of rates, &c.; incorporation of certain Acts.

City of Dublin Gas Consumers Company.—Incorporation of company; powers to erect gas-works, and to supply gas in the county of the city of Dublin; compulsory purchase of lands; incorporation of general Acts; and other purposes.

Clevedon Gas.—Dissolution and reincorporation of the Clevedon Gas Company, Limited; power to maintain works and light Clevedon and other places with gas; cancellation or alteration of Deed of Settlement and Articles and Memorandum of Association; alteration and increase of capital; and other purposes.

Cork Gas Consumers Company, Limited.—Dissolution and reincorporation of company, with power to maintain existing works, &c.; regulation and increase of capital.

Cork Improvement.—Amongst other provisions, power is taken as to the water supply and the revenues arising from water; and to purchase the works of the Cork Gas Consumers Company, Limited, and to erect gas-works and supply gas; amendment of Acts; and other purposes.

Dartford Water.—Power to Local Board of Health for the district of Dartford to sell their water-works to the company of proprietors of the Kent Water-Works; confirmation of agreement; provision as to application of purchase-money; amendment of Acts; and other purposes.

Derby Water-Works.—Extension of limits; new works; amendment of Act.

Dewsbury Extension.—To extend and alter boundaries of municipal borough and district of Dewsbury; water-works extension; power to raise money, levy rates, &c.; repeal and amendment of Acts; and other purposes.

Dundee Gas.—The establishing and incorporation of a public trust or commission, to be an incorporated body, for lighting the streets and other public places in Dundee and places adjacent, within the parishes of Dundee and Liff and Benvie, by gas, and for supplying gas to the inhabitants and occupiers of property therein; and in particular for transferring the works and undertakings of the Dundee Gaslight Company and the Dundee New Gaslight Company to the intended trust or commission; and confirming and carrying out by enactments an agreement between the magistrates and Town Council of Dundee and the said companies for such transference, and giving the said companies a preferable lien over the works and undertakings of the said companies respectively and the property and revenues of the trust or commission; and for regulating these things, and for empowering the trustees or commissioners to borrow money, to levy rates or rents, to supply gas, to impose assessments on the occupiers of the lands and heritages and other premises within the town or burgh of Dundee and places adjacent; and for regulating such assessments.

Dundee Gas.—The establishing of a public trust or commission, to be an incorporated body, for lighting the streets and other public places in Dundee and places adjacent, within the parishes of Dundee and Liff and Benvie, by gas, and for supplying gas to the inhabitants and occupiers of property therein; and in particular for enabling the said intended corporation to lease or purchase the works of the Dundee New Gaslight Company, with all the apparatus thereto belonging, in terms of the 57th section of the Act 9 Vict. cap. 50, by which that company is incorporated; and for regulating these things, and for empowering the trustees or commissioners to borrow money, to levy rates or rents, to supply gas, and to impose assessments on the occupiers of the lands and heritages and other premises within the town or burgh of Dundee and places adjacent; and for regulating such assessments.

EASTBOURNE GAS.—Dissolution of company and cancellation of Deed of Settlement; incorporation of new company; powers to manufacture and supply gas to Eastbourne and Willingdon, in the county of Sussex; purchase of lands; construction of works; arrangements with local bodies, &c.; powers to dispose of lands and works; regulation and increase of capital, and other provisions relating thereto; and other purposes.

FARNWORTH AND KEARSLEY GAS.—Increase of capital and borrowing powers; extension of limits into certain neighbouring townships; amendment of Acts.

GRAND JUNCTION WATER-WORKS COMPANY.—Increase of capital; amendment of Acts; acquisition of lands in the parish of St. Mary Abbots, Kensington.

HALIFAX CORPORATION WATER-WORKS AND IMPROVEMENT.—Water-works extension, purchase of lands and easements, and construction of works; purchase, sale, and exchange of lands; powers to raise moneys, &c.; to light, cleanse, sewer, and improve the borough; incorporation, repeal, and amendment of Acts; and other purposes.

HYTHE AND SANDGATE GAS AND COKE COMPANY.—Dissolution and re-incorporation of company; powers to supply gas to Sandgate Local Board district, Shorncliffe Camp, Cheriton, Newington-next-Hythe, Saltwood, St. Leonard, Hythe, and West Hythe; to maintain, enlarge, and improve existing works; increase of capital and borrowing powers; incorporation of Acts.

IMPERIAL GAS.—Increase of and provisions as to capital, &c.; purchase of lands at St. Leonard, Bromley, and West Ham, for the construction of a gas-works and roadway thereto, with bridges over the river Lee and Bow Creek; provisions as to laying mains, &c., and other powers of the company; powers to purchase, lease, or work collieries, collieries, mines, &c.; to co-operate with other companies; amendment of Acts.

LEEDS NEW GAS COMPANY.—Further money powers; regulation of capital and borrowing powers of the company; increase or reduction of nominal amount of shares and stock, and the dividends thereon; purchase and sale of lands; power to erect additional gas-works; amendment of Acts.

LEWES WATER-WORKS.—Further money powers and arrangements; new and altered provisions as to rates, supply, and consumers; repeal or amendment of Act.

LEYTON GAS.—Incorporation of company, with powers for manufacturing and supplying gas in the parishes of Leyton and Walthamstow, in the county of Essex; purchase of works of County and General Gas Consumers Company, Limited.

LLYNVI VALLEY GAS.—Incorporation of company; powers to manufacture and supply gas to Llangonoyd and other places in the county of Glamorgan; purchase of lands; powers to Llynvi and Ogmore Railway Company and Llynvi Vale Iron Company, Limited; and other purposes.

LONDON (CORPORATION) GAS.—Purchase of lands and erection of gas-works in the parishes of West Ham and East Ham, in the county of Essex, and the parish of Woolwich, in the county of Kent; power for the corporation of the City of London to purchase, by agreement or compulsion, all or part of the existing gas-works and property of the Great Central Gas Consumers Company, the City of London Gas Company, and the Gaslight and Coke Company; to purchase by agreement the gas-works and property of the West London Junction Gas Company, Limited; power to manufacture gas; power to supply gas within the City of London and liberties, and the Metropolitan Meat and Poultry Market, and the Metropolitan Cattle Market, in the parish of St. Mary, Islington; powers as to laying of pipes in certain parishes for conveying gas from the works to the City; amendments of Acts; and other purposes.

LOUGHBOROUGH GAS.—Incorporation of company; powers to maintain works, and hold and purchase lands, and light Loughborough with gas; cancellation of Deed of Settlement; additional capital, &c.

LOUGHBOROUGH LOCAL BOARD.—Construction of water-works, and supply of water; compulsory purchase or lease of gas-works of the Loughborough Gas Company, or arrangements with and dissolution of that company; enlargement of gas-works; supply of gas; purchase or lease of lands; borrowing moneys; levying rates and charges; application of moneys, funds, rates, &c.; exemptions from tolls, rates, &c., within the district of the local board; amendment of Acts.

MAIDENHEAD WATER-WORKS.—Incorporation of company; powers to supply water to the town of Maidenhead, and to certain neighbouring parishes and places in the counties of Berks and Buckingham; construction of works; diversion and appropriation of water; arrangements with public bodies; and other purposes.

MARYPORT DISTRICT AND HARBOUR.—Alteration of improvement and gas and water limits of "Maryport Improvement and Harbour Act, 1866;" supply of water to Flimby; acquisition of lands for gas-works; amendment of Acts.

MERSTHAM, NUTFIELD, AND BLETCHINGLEY GAS.—Incorporation of company; powers to erect and maintain works, and to manufacture and supply gas to the parishes of Merstham, Nutfield, and Bletchingley, all in the county of Surrey; purchase of lease of lands by agreement; power to levy rates; incorporatiou of general Acts.

MERTHYR TYDFIL GASLIGHT COMPANY.—Incorporation of persons trading under the name of the Merthyr Tydfil Gaslight Company, and others; powers to raise further capital, to maintain the existing and construct additional gas-works to manufacture and supply gas within the parishes of Merthyr Tydfil and Vaynor, and to purchase lands by agreement; power for public bodies to make agreements with company, and to raise money by rates.

METROPOLIS GAS.—Amendment of Metropolis Gas Act, 1860, and of the local and personal Acts relating to the supply of gas in the metropolis and adjacent districts; amalgamation of all or some of the metropolitan gas companies, and adjustment of capitals; reducing rates, charges, and dividends of gas companies; regulating future price, purity, illuminating power, and pressure of gas; purchase, by compulsion or agreement, and sale of gas-works, and providing other gas-works; to compel gas companies to sell gas in bulk; creation of rent-charges or other securities; levying rates; borrowing of money; and other purposes.

METROPOLIS SUBWAYS.—Provisions as to the use of subways provided by Metropolitan Board of Works; for requiring water, gas, and other companies and persons to lay down pipes, &c., in subways so provided; restrictions against breaking up streets; amendment of Acts.

METROPOLITAN GAS COMPANIES AMALGAMATION.—Amalgamation of all or some of the metropolitan gas companies or shareholders therein; regulations as to capital and new capital; alterations of districts; powers as to compensation and superannuation, colliers, collieries, &c.; amendment of Acts; and other purposes.

MORLEY GAS COMPANY.—Further money powers; capitalization of moneys expended on works out of revenue; extension of limits of supply, to include the parish of West Ardsley, in the West Riding of Yorkshire; alteration of qualification of directors; rates: amendment of Act.

NEWRY WATER-WORKS.—Incorporation of company; acquisition of existing water-works; construction of works and supply of water to the town of Newry and adjacent districts; arrangements with Newry Town Improvement Commissioners with Newry Water-Works Company, and powers to them; rates and assessments.

NORTH MIDDLESEX WATER-WORKS.—Powers to maintain and extend existing works, &c.

PETERBOROUGH GAS.—Dissolution and reincorporation of company; powers to erect gas-works, and to supply gas, &c., in Peterborough and adjacent places; purchase and lease of lands and of existing gas-works at Peterborough; powers to commissioners and local boards, &c.; levying of rates; amendment of Acts, &c.

PETERBOROUGH GAS.—Supply of gas to the city of Peterborough and neighbourhood; purchase, maintenance, and extension of existing gas-works; arrangements with Improvement Commissioners and other public bodies; incorporation of company, &c.

READING LOCAL BOARD OF HEALTH.—Power to purchase undertaking of Reading Water-Works Company; to raise money; to levy rates; amendment of Acts.

RUTHIN WATER.—Incorporation of company; construction of works; supply of water to Ruthin and neighbourhood; and for other purposes.

ST. MARY CHURCH LOCAL BOARD.—Powers to local board to supply gas within their districts; to purchase lands, to construct works; to purchase mains, pipes, and other property of the Torquay Gas Company within the district; restriction on that company from supplying gas within the district; confirmation of agreement with that company; powers to erect town-hall and other public buildings, and to let the same; to dispose of surplus lands; to levy rates and rents; to alter existing rates to raise money, and other powers; amendment of Acts.

SILVERDALE IMPROVEMENT.—Appointment of commissioners; construction of works; supply of water and gas to Silverdale and neighbourhood; power to make markets, &c., and other improvements; purchase of lands and buildings; power to levy tolls and rates, and to raise money; further powers.

SLIGO BOROUGH IMPROVEMENT.—Amongst other provisions, power is taken as to construction of new water-works; purchase of gas-works by corporation; purchase and sale of lands; supply of water and gas, &c.; and amendment and incorporation of other Acts.

STAFFORDSHIRE POTTERIES WATER-WORKS.—Enlargement of works; additional works; extension of limits of supply; increase of capital; amendment of Acts.

SUNDERLAND AND SOUTH SHIELDS WATER.—Extension of works and of limits of supply; additional capital; amendment of Acts.

THE GASLIGHT AND COKE COMPANY.—Repeal and consolidation of Acts; dissolution and reincorporation of company; regulation and increase of capital; purchase of lands, and construction of new gas-works and road thereto; sale of superfluous lands; manufacture and sale of gas and residual products; supply of gas to and agreements with other gas companies, bodies, and persons; power to levy tolls, rates, and duties, &c.; power to the City of London Gaslight and Coke Company to subscribe; dock and other works near Barking Creek.

TOPSHAM, WOODBURY, AND LYMPSTONE WATER.—Incorporation of company, construction of works, and supply of water to the parishes of Woodbury, Clyst St. George, Topsham, and Lympstone; amendment or repeal of Acts, &c.

WARRINGTON WATER.—Amendment of Acts; enlargemeut of works; additional works; purchase of lands; extension of limits of supply; increase of capital; levying of rates; power to supply corporations and local bodies; and other purposes.

WELLINGBOROUGH WATER.—Incorporation of company; power to company to supply water and to levy rates; and for other purposes.

WINDSOR AND ETON WATER-WORKS.—Powers to owners of existing water-works, or incorporation of company; power to supply Windsor, Eton, and other parishes.

WORTHING, BROADWATER, HEENE, AND WEST TARRING GAS CONSUMERS COMPANY.—Incorporation of company; powers to erect gas-works in the parish of Broadwater, in the county of Sussex, and supply of gas to certain parishes and places in the said county; purchase of the Worthing Gaslight and Coke Company's existing works; incorporation of general Acts; and other purposes.

WORTHING GAS.—Incorporation of Worthing Gaslight and Coke Company; powers to maintain existing works; to purchase and take additional lands; and to light the town and district of Worthing, and the district of West Worthing, and other parishes and places with gas; cancellation of Deed of Settlement; additional capital, &c.; alteration of amount of shares; exemption of company from payment of duty on coals, &c., imposed by 1st and 2nd Geo. IV., cap. 59, sec. 127; repeal or amendment of Acts; and for other purposes.

UNITED GENERAL GASLIGHT COMPANY.—Repeal of charter; division of works and of capital; incorporation of company to light Limerick; purchase of works of corporation; sale of them.

YEADON AND GUISELEY GASLIGHT AND COKE COMPANY.—Incorporation into a company of the proprietors of the Yeadon and Guiseley Gaslight and Coke Company and other persons; money powers; dissolution of existing company; power to light with gas the townships of Yeadon, Guiseley, Rawden, and Carlton, in the parish of Guiseley, and the townships of Menston and Hawksworth, in the parish of Otley, all in the West Riding of Yorkshire; power to new company to hold and purchase lands; rates; agreements with other corporations and persons; and other purposes.

YSTRAD GAS AND WATER COMPANY.—Dissolution and reincorporation of Ystrad Gas and Water Company, Limited; regulation and increase of capital; supply of gas and water within certain parts of the parish of Ystrad-y-Fodwg, in the county of Glamorgan; new works for supply of gas and water; diversion and appropriation of water; purchase of lands by compulsion or otherwise; power for public bodies to agree with company for supply of gas and water, and to raise money by rates.

MULLINGAR GAS COMPANY, LIMITED.—The *Dublin Gazette* contains a notice to the effect that by special resolutions passed at an extraordinary general meeting of the above company held on the 30th day of September, 1867, and confirmed at an extraordinary general meeting of the said company held on the 16th day of October, 1867, it was resolved—First, "That the company be forthwith wound up voluntarily."—Second, "That Messrs. W. Farrell and Thomas Smyth, both of Mullingar, be appointed liquidators of the company for the purpose of carrying the winding up into effect."

Miscellaneous News.

METROPOLIS GAS SUPPLY.

COURT OF COMMON COUNCIL—GUILDHALL, THURSDAY, NOV. 28.

At the Meeting of the Court this day—the Right Hon. the LORD MAYOR (Alderman Allen) presiding,

Mr. E. DRESSER ROGERS introduced a deputation from delegates representing several parishes in the metropolis, who presented the following petition:—

That your petitioners are desirous of representing to your honourable court the helpless condition of the whole of the metropolis, except the City of London, in the matter of initiating legislation by giving parliamentary notices for a bill to regulate the supply of gas to the metropolis, as specially recommended last session by the committee of the House of Commons, in consequence of the Metropolitan Board of Works having decided not to introduce a bill, the effect of which will be (unless a remedy can be found) to leave the metropolis, except as before stated, unrepresented, except in the consideration of bills before the House of Commons, which may be withdrawn at any moment unless there are competing schemes to protect the public.

Your petitioners, therefore, pray that your honourable court will take the matter into your consideration, and, as in duty bound, they will ever pray.

(Signed on behalf of the delegates)
J. OLDFIELD PHIPPARD,
Secretary to the Delegates, St. James's Vestry Hall, Piccadilly.

Mr. ROGERS: I beg to move that the parties at the bar be allowed to be heard.

Mr. H. L. TAYLOR: You cannot do that; you can ask them any question you like.

Mr. ROWE (addressing Mr. J. Beal, who headed the deputation): I beg to ask a few questions of the petitioners at the bar. I see the requisition is signed by Mr. Oldfield Phippard; is he your chairman?

Mr. BEAL: He is only secretary to the delegates; he is not present to-day.

Mr. ROWE: But he is the party who has signed the petition.

Mr. BEAL: He is.

Mr. ROWE: I see it is "signed on behalf of the delegates." May I ask by whom those delegates were sent?

Mr. BEAL: They were sent from various vestries of the metropolis—St. Marylebone, St. Pancras, Islington, Chelsea, St. George's, St. James's, St. Saviour's, and some others.

Mr. ROWE: These were all regularly constituted vestries?

Mr. BEAL: All regularly constituted vestries under the Metropolis Local Management Act.

Mr. ROWE: Now, you speak in your petition of "the helpless condition of the whole of the metropolis except the City of London." Will you state what you fairly mean by that? because——

Mr. H. L. TAYLOR: No, no; ask the question only.

Mr. BEAL: We mean that the vestries as such have no power to initiate legislation by giving parliamentary notice to introduce a bill on this question. The Metropolitan Board only has statutory power to do so, but they have declined, and, therefore, the metropolis is at the present moment totally helpless, unless some machinery can be devised like that which was created in 1860, when the several vestries combined to raise funds for the purpose of introducing a bill. In this instance the Metropolitan Board did not come to their decision till the day before the notices had to be given, and as it would take one month for the vestries to arrange such an organization as I have referred to, we have no means of joint action in applying to Parliament.

Mr. ROWE: Then what I understand you to ask in your petition is that we should prosecute the gas question in Parliament at our own entire expense, and so relieve the metropolitan vestries from the necessity of combining together and paying any portion of the expense.

Mr. BEAL: We are already so much indebted to the corporation of London for what they did two years since that we should be sorry to impose upon them any such burden.

Mr. ROWE: But that is the object of your petition?

Mr. BEAL: Our petition is that the City will be so kind as to allow their own special committee acting for them in reference to the gas question, to render us such assistance as will enable us to present ourselves before Parliament at the commencement of the next session, and then either the vestries or the Metropolitan Board can take up the question as may be thought best.

Mr. ROWE: How can they take up the question if they are in so helpless a condition? (Loud cries of "Oh, oh!")

Mr. BEAL: The Standing Orders of the House of Commons——

Deputy FRY: I rise to object to this. It is not the right way for a gentleman at the bar to enter into an argument with a member of the court. Any question for the sake of information may be allowed to be answered, but certainly no argument can be carried on.

Mr. ROWE: May I ask what you want in going to Parliament? Is it on account of the gas being so dreadfully bad?

Mr. BEAL: To reduce the price and to amend the quality.

Mr. ROWE: May I ask you if the gas is generally very bad?

Mr. BEAL: In our opinion it is.

Mr. ROWE: May I ask you what test you have, or how you arrive at the fact that it is very bad? Have you engaged any scientific person to test the gas?

Mr. BEAL: We rely upon the evidence presented last session to the committee of the House of Commons, and upon which that committee made a special report.

Mr. ROWE: Dr. Letheby, you are aware, is the gas analyst for the corporation—("Order," "Question")—and he has stated that the illuminating power of the gas supplied to the City of London is nearly 2 candles higher than is required by the Act of Parliament.

Mr. H. L. TAYLOR: I rise to a point of order. My friend may say this by-and-by in his speech, but for the present he must confine himself entirely to eliciting any information he desires from the petitioners.

Mr. GRIMWADE: Will the gentleman who speaks for the deputation say what parish he represents?

Mr. BEAL: St. James's.

Mr. ROWE: The petition states that the bills before the House may be withdrawn at any time—"at any moment." I presume the gentlemen here are aware that a committee of the House of Commons recommended that the whole of the thirteen companies should be amalgamated into one. ("Order, order.") You are aware of that?

Mr. BEAL: I am aware of the recommendation of the committee that there should be an amalgamation of the several companies, and that the companies have given notice of a bill for that end; but we have stated in our memorial that the companies may withdraw that bill in the ensuing session, unless there is some competing bill. It is a matter of fact that the thirteen companies, having put their seal to that bill, if any one of them should withdraw, the bill falls to the ground. After the experience of last session, we believe there will be no legislation in the interest of the ratepayers unless something is done by you.

Mr. ROWE: There is a notice of a bill to be introduced into the House next session, which the delegates are supposed to have given, although there is no name to it. Is that your bill?

Mr. BEAL: The notices for that bill have been given upon my own personal authority, because no one at the moment was prepared to do it.

Another member of the deputation was about to speak, but was met with loud cries of "No, no."

Mr. ROGERS: I beg to move that the petition be referred——

Mr. H. L. TAYLOR: Are there any other questions to put to the deputation? ("No.")

Mr. ROGERS: I beg to move—"That the petition be referred to the special Gas Committee, for them to examine and report upon;" and, in doing so, I am not going to detain the court——

Deputy ORBARD: The petitioners may withdraw.

Mr. MEDWIN: I do not know whether I am in order in asking whether the delegates, through any of their number, have anything else to say. ("Order, order.") I have a question to ask. ("You are too late.")

The LORD MAYOR: I do not know whether Mr. Medwin is aware that the delegates can only address the court by special permission.

Mr. MEDWIN: I was about asking a question of the petitioners at the bar in addition to the questions already asked, and it is this, whether, unless this court render them the help and sympathy they ask, they have any chance of obtaining or otherwise securing what they seek for the interests of the ratepayers of the metropolis.

Mr. BEAL: We have addressed ourselves to the several vestries of the metropolis, and requested that they would do as they did in 1860—provide a fund, or guarantee among themselves a sum equal to the expenditure we may be put to. But the opinion of counsel has been taken, which is to the effect that, under the Metropolis Local Management Act, the vestries have no authority so to vote the money of the ratepayers; therefore, although we have made that appeal, we have little hope that anything will be done, and, in fact, we throw ourselves upon the court to render us substantial assistance.

Mr. TAYLOR: Do I understand you that you want this corporation to seek power in this question of gas outside the City?

Mr. BEAL: No; we have given notice of a bill simultaneously with the notice given by the corporation, and for the same object as the City authorities, but for the area beyond your boundary; and in addition to that we have suggested in our notice another plan which you have not—viz., that in the event of our failing with the amalgamation scheme, we should have power to contract with the companies to supply gas in bulk to the parochial authorities, a matter which I think is of importance in the event of the larger measure failing.

Mr. TAYLOR: Do I understand you to say that anything you are now asking us would involve the corporation in any expense?

Mr. BEAL: I think it would. I think it would involve the corporation in an expense of £250 or £300; perhaps not so much, but I am stating the outside.

Mr. TAYLOR: You think that in assisting you to promote any measure, at an expense of £200 or £300, you would accomplish the object you seek?

Mr. BEAL: Yes, it would largely assist us. You yourselves, also, as I have stated, have a bill before Parliament, and we think it would greatly assist you if the metropolis had a bill before Parliament for the same purpose.

Mr. TAYLOR: Is there a monopoly outside the City in the supply of gas?

Mr. BEAL: Yes; precisely the same as in the City.

Mr. TAYLOR: That is to say, the different parishes are divided among the different companies?

Mr. BEAL: Yes. We suggest an amalgamation of the companies such as that recommended last year.

Mr. TAYLOR: But at present there is a division of the parishes among the different companies?

Mr. BEAL: The companies have districted all parts of the metropolis.

The deputation then withdrew.

Mr. ROGERS: I beg to move—"That the petition be referred to the special Gas Committee to examine into and report to this court;" and in doing so I was about to say, just now, that the members of this court being so well acquainted as they have made themselves with the importance of the gas question, it does not require me to address them at any length in moving that the petition be referred. I am justified, from personal knowledge acquired, in saying that in all parts of London, at the present time, the inhabitants are considerably obliged to and feel themselves under a debt of gratitude to the corporation for what they have done in the past in reference to this particular question. You know very well that when this court went to the House of Commons on the first occasion for a bill to give them power to supply the City of London with gas, we, at the request of the Government of the day, took upon ourselves the whole cost of those proceedings in the interest of the metropolis at large, and I am persuaded that our application produced good results, which are now being felt throughout the whole of the metropolis. The inhabitants of the metropolis generally are aware of that fact, and I say they feel deeply grateful to you for having done so. In the last session of Parliament you were induced for good reasons then given to withdraw your own bill, and the House of Commons, having given a large amount of consideration to the question of the supply of gas, made a most ample and able report, in which they recommended particularly that the companies now supplying London should bring in a bill to amalgamate their several undertakings, and that in the event of such a bill not being brought forward, or if brought forward, not being considered satisfactory, power should be given to the corporation and the Metropolitan Board of Works to make gas for the supply of the whole metropolis. It was supposed by most persons in London that the Metropolitan Board of Works, finding you were alive to the importance of supplying gas, would themselves have applied to Parliament for the same purpose, or at all events would have prepared a bill to give those outside the City of London the means of supplying themselves with gas. But the Metropolitan Board of Works, after making a report which I fearlessly say is an unfair report to this corporation—for while taking a great share of credit to themselves for the past, they give very little to us—have come to the determination not to introduce any bill at all, but simply to go to Parliament and watch the proceedings there as before.

Deputy ELLIOTT: Hear, hear.

Mr. ROGERS: My friend says, "Hear, hear." Of course this determination answers admirably well for his purpose. Nothing could be better for the gas companies than for the Metropolitan Board to decline to take upon themselves this duty for the portion of London outside of the City. It is because of this that the appellants come here from all parts of London and ask your assistance. They say to themselves, "Where can we go and ask for help?" and they say, "Let us go to the corporation, who have before done their duty so nobly, and ask them to help us out of the strait." I hope most sincerely that they will find you do as you have done before, not only

in the past year or two, but for many ages past; for whenever the help of able and noble-minded men has been required, it has been found in the corporation of London. (Laughter.) I say fearlessly, looking at our records, and seeing the thousands upon thousands of pounds that have been spent in past times in helping those who could not help themselves, nothing could be better than for you now to come forward, as I hope you will do, to help these men who require our co-operation.

On the question being put,

Mr. ROWE said: I beg leave to move an amendment. ("You are too late.") No, I am not too late. My Lord Mayor, I shall certainly move as an amendment that this petition do lie upon the table, and I hope and trust I shall give sufficient reasons to induce the corporation to agree with me. In the first place, when we are told of the helpless condition of the vestries surrounding the City of London, that they cannot afford to combine and club together to carry forward an opposition in Parliament against any bill brought in by others, or to support any bill they desire themselves to promote, I am quite surprised that such a statement should be made in this court. I trust that you will take the trouble to reflect that we have already spent from £15,000 to £20,000 in the last two years in this matter.

Mr. BONTEMS: No, no.

Mr. ROWE: I say we have, and that the gas companies have been put to an enormous expense in defending themselves from these attacks. I want to know whether in this court, which represents the feelings and interests of the citizens, gas shareholders have not as much right to be represented as gas consumers. I want to know whether the rights of gas shareholders are to be totally ignored by this corporation. I cannot but suppose for one moment that justice will be done to gas proprietors as much as to gas consumers. The Metropolitan Board of Works have refused to send any bill to Parliament, and I believe that public opinion has materially altered—that it has been mitigated in its severity towards gas shareholders. (Oh, oh!) It is on that account that the Metropolitan Board have refused to go to Parliament, and the vestries have no power to go there. I want to know whether the gas companies are year after year to be put to these great expenses in defending their interests against such attacks. One gas company, I know, which has recently held its meeting, has been hardly able to pay 5 per cent. The chairman of our Gas Committee is himself the director, and I believe the vice-chairman, of a gas company in the neighbourhood of London, which petitioned Parliament against the bill of last session. He was the only one who opposed that petition, and when the vote was taken upon it he walked out of the room. He knows as well as any one that 18-candle gas cannot be supplied in London at 3s. 6d. per 1000 feet. Is this court about to help to rob (for I cannot call it anything else) the proprietors of gas shares of their dividend, simply because a clamour has been excited in favour of cheap gas? Gas is now being supplied, looking at the advanced price of labour and of coal, as cheap as it can possibly be. The gas companies have agreed to make sacrifices, in order that they may retain some portion of their dividends, but these agitators will not hear of anything short of 18-candle gas at 3s. 6d. per 1000 feet. I say, and say it advisedly, and I stake my existence upon it, that gas cannot be made in London to pay any dividend to the gas companies at the price and of the illuminating power claimed by these agitators. I state it advisedly, and I repeat it. Talk about the "able and noble-minded men" in this corporation; I do not believe there is any body of men who, generally speaking, look to the manner in which they spend money more adroitly than do this corporation; and I want to know whether, year after year, you are going to carry on this crusade against the gas companies? The companies are bound by Act of Parliament, as soon as it is in their power to pay their statutory dividend, to reduce the price of gas to the consumers; and as to the allegations about the bad quality of the gas at present supplied, I should like to ask these gentlemen, who say they represent the vestries, whether they have ever sought the remedy which the Act of 1860 gives them when the gas is deficient in illuminating power or purity? They have a summary remedy before a magistrate in such cases, and the companies are liable to a penalty of £50. But I say the consumers have never sought that remedy. The Act of 1860 gives them summary power over the gas companies, and inflicts serious penalties for any breach of duty which can be brought home to them. But the consumers have not taken advantage of those clauses, which proves that they have not much to complain of. All we can get out of them is, that they want cheap gas of a higher illuminating power. Now, I say that, with all the elements of gas manufacture considerably enhanced, it is not fair to take the one or two prosperous years which the companies have enjoyed as an average state of things. You must take an average of five or ten years, and not a single year or two years success, in judging of what can be done by them; and I say, and say it advisedly, that the price of gas shares has gone down from 30 to 50 per cent. (Hear, hear.) And I say more than this, that you will destroy all the gas property in the metropolis if you persevere in this expensive course of litigation—a course which I am satisfied will never receive the countenance of the tribunal of the House of Commons, where both parties will be heard, and justice be sure to be done.

The amendment was not seconded.

Mr. H. L. TAYLOR: I think I may state, as far as the Metropolitan Board of Works are concerned, that as a matter of fact they are not going to Parliament this year for a bill with respect to the supply of gas, inasmuch as I apprehend they are about to ascertain what the Government propose to do. They did expect the Government would interfere, and take the matter in their own hands. But is my friend so sure that if the Government do not take this matter up, the Metropolitan Board will not next year bring in a bill which will not leave the gas companies in their present happy position? I would advise my friend, who is an able representative of the gas companies in this court, to look a little ahead, and see whether it is not really possible for them to make gas better and cheaper, while obtaining a fair and reasonable profit for themselves. As it is at present, so long as they can receive their statutory dividend of 10 per cent. there is no amount of extravagance they will not commit. That is the great secret; it is no matter what expense they are put to, they feel that they are safe under the provisions of the Act of 1860—that iniquitous Act—which ought to be repealed, and I am sure the court will use every effort in their power to accomplish that object.

Mr. BONTEMS: I suppose the amendment of my honourable friend (Mr. Rowe) will not be seconded. I trust that the petition of the delegates from the vestries will be referred to the Gas Committee for consideration. We have always received from those gentlemen the best assistance they could render throughout our proceedings, and I am only sorry that there is no local authority in other parts of London than the City which can take advantage of the very able report presented to the House of Commons last session. With reference to the gas company to which I belong, and which was alluded to by Mr. Rowe, I should just like to say that I think they acted very unwisely in the course they took on that occasion. They received a communication from other companies in London as to what was being done, and immediately they followed like a parcel of sheep. The gas companies of London committed themselves last year to an opposition to a measure which a great many of them would be very glad to accept this year. They begin to see that they have made a very great mistake in refusing to accede to the offer made to them by the select committee last year. As to the price at which it is possible for the companies to supply gas, you will remember that we have had two parliamentary committees, which have devoted a great deal of time to the consideration of this question, and both of them have decided against the companies; therefore I think we have very good proof that the companies can do better for the public than they have done. And if I am not very much mistaken, the next session of Parliament will not close without their being compelled to do so.

After a few words from Mr. ROGERS in reply, the motion was put, and carried.

DESCRIPTION OF A REVOLVING APPARATUS FOR WASHING IMPURITIES FROM GAS AND AIR.

By JOHN REID, F.R.S.S.A., Engineer and Manager of the Edinburgh and Leith Gas Company.

[*Paper read before the Royal Scottish Society of Arts.*]

The contrivance which I have now the honour of bringing under the notice of the Society of Arts was put in operation in September, 1865, at the works of the Edinburgh and Leith Gas Company, in Leith, and has been continued in constant and successful operation day and night ever since. It has in every way realized expectation, and in many respects surpassed it. The machine takes its place in the gas-works as a *washer*—an apparatus being now almost universally employed by gas companies for assisting in the purification of gas for illuminating purposes.

Before describing the arrangements of my apparatus and mode of working, it may be useful to explain its special function, as well as the usual structure of *washers* in general use in large gas establishments. In doing so, however, I need not enter, even if I were competent, into the chemistry of the numerous complicated products from the distillation of gas coal. It is sufficient that I merely indicate generally the nature of the substances in combination with the crude gas which it is the business of the gas engineer to have removed, and as far as possible utilized, before the finished gas is passed into the gasholder for distribution.

The first process in the manufacture is the distillation of the gas coal in brightly heated close retorts—usually made of fire-clay. In the course of three to four hours a charge of about 220 lbs. of Scotch cannel coal in each retort will have given off its volatile products, after which the residual coke is drawn out and replaced with a fresh charge of coal. The component elements of the mineral are thus broken up into a variety of new forms, gaseous, liquid, and solid. Some of the newly liberated elements enter into new combinations, forming substances unknown as such in the original coal. These consist chiefly of compounds of hydrocarbons, sulphuretted hydrogen, ammonia, carbonic acid, carbonic oxide, and compounds of sulphur and carbon; and when the distillation is completed it is found that solid carbon, with more or less earthy and other matters—depending on the kind of coal—is all that remains in the retort. Out of 100 lbs. of coal thus treated, generally about one-half of its weight will be found to have gone off in the form of gas and vapours. These, on passing onwards, and being cooled down in condensing apparatus, deposit something like one-half of their weight in the form of coal tar, tar oils, water, solid and liquid ammonia, &c.

Leaving those grosser substances behind, the gas passing onwards is still tainted with impurities requiring removal. These consist mainly of sulphuretted hydrogen, carbonic acid, and ammonia, all in a permanently gaseous condition, and must as far as possible be removed before the gas is fit to be used for illumination by the consumer.

Hydrated lime and lime water, or both, are the agents chiefly employed in Scottish gas-works for taking up the sulphuretted hydrogen and carbonic acid, and they do so effectively when the apparatus is sufficiently adapted to the work. But it often happens that while every trace of the former impurity has disappeared, the gas will be found not entirely free of the latter, especially in the smaller works, where washers are not employed.

The third impurity, *gaseous ammonia*, is usually removed by liberally washing the passing current of gas with water, with which it readily combines.

Dilute sulphuric acid has been employed by Mr. Croll, of London, for combining with the ammonia at this stage, and forming a solution of sulphate of ammonia. But it has not met with general adoption, for various reasons; but mainly, I believe, on account of the corrosive action of the acid, which has a destructive effect upon the metals forming the apparatus. Water alone is found suitable, and is now most usually employed.

This process usually takes place immediately before the gas is brought into contact with the lime, and has been generally employed in gas-works for the last quarter of a century. But it has been observed, within a more recent period, that other important advantages are gained by the use of this process. When worked up to sufficient ammoniacal strength, it becomes an efficient agent in the removal of carbonic acid from the gas, and effects a saving in lime. Another object of not less value is subserved at this stage of the manufacture. It has been mentioned that in the process of condensation certain substances are left behind in the condensers. Among these the tar and oils, which vary greatly in their character, according to the degree of temperature at which they pass from vapour to liquid. The denser varieties fall first, followed by lighter oils of greater volatility. Those formed towards the close of the condensing process seem as if in a manner undecided whether to continue as liquid or to reassume the gaseous form. These light oils contain the very richest illuminating elements of gas; and it has been found that if they are again brought into contact with the gas in the washing apparatus, the gas has the property of taking up a good deal of these hydrocarbon vapours, which re-form themselves into permanent gas, and thus to a considerable extent restore the illuminating elements previously parted with and left behind in the condensers.

Various forms of apparatus have been devised for effecting this washing operation, which must be effected upon the stream of gas as it passes rapidly onwards from the retorts, and with as little impediment to its free passage as possible. One form was for long, and is still continued in many gas-works, consisting of an oblong iron chest—say 25 feet long, by 6 feet wide. The top of the chest slanting off the level, one end being 7 or 8 inches lower than the other, an elevated chamber is constructed at each end as entrances and exits for the gas. The vessel is charged with such a body of water, that the depressed end of the cover is submerged some 7 or 8 inches. The gas on being introduced within the chamber at the lower end, presses down the surface of the water sufficiently to make a passage for itself along and under the cover to the chamber at the exit end, and in doing so is broken up into bubbles, which, in struggling their way through, become partially washed by contact with the water, which slowly becomes impregnated with ammonia, and is from time to time withdrawn and replaced with fresh water. An obvious objection to this form of washer, is the imperfect contact of the large globules of gas with the washing liquid, which ought, moreover, to be kept continually in an active state of agitation by some kind of stirring apparatus; but the greatest objection is the backward strain of pressure thrown on the

retorts by the hydrostatic pressure exerted by the gas in forcing its way through the machine.

Various contrivances have been adopted for getting rid of this objection, and that now in general use consists of an elevated structure of iron, of 25 or 30 feet high, of a circular or rectangular shape, and from 3 to 6 or 7 feet wide. The gas being introduced into the bottom of the vertical vessel, passes upwards to the top, where it escapes by an outlet-pipe, or, as the case may be, enters a second column, and descending passes out at the bottom. Meantime large and powerful pumping apparatus is employed to force up to the top of the structure a constant stream of water, which, falling in a shower through the passing current of gas, generally effects the washing process satisfactorily. The same water is pumped over and over again, until it has been so impregnated with ammonia that it is removed, and fresh water again introduced. This form of machine is not free of serious objections, the first of which is the difficulty of pumping up a sufficient volume of water to meet the greatly increased volume of gas that is passing the machine in winter, as compared with summer, which usually amounts to three or four times the

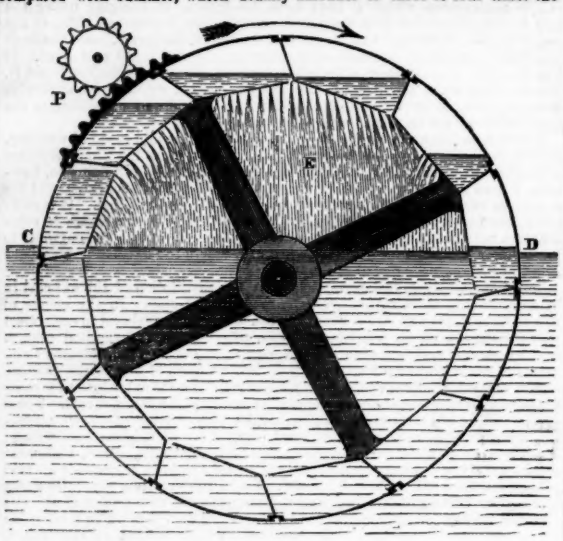


Fig. 1.

quantity in the same time; and it is also a matter of well-known experience, that all kinds of pumping machinery, requiring, as in a gas-work, to act day and night without intermission, is very liable to get out of order, and unless relays of apparatus are kept in readiness against accident, it is obvious that no stoppage for repairs can take place, without allowing the gas meantime to pass without the washing process. I estimate that every 1000 feet of gas should be treated with 100 gallons of water (the water, of course, should never be below 4° or 5° of saturation, otherwise it has a deteriorating effect on the illuminating power). The constant elevation of this body of water to the top of such a machine is expensive in engine power, and from the liability to get out of order for this work, it is a constant subject of care and anxiety in every large gas-work during the whole of the winter months.

Having experienced this with an apparatus such as last described, and being desirous, if possible, of getting rid of all the objections stated, I succeeded in contriving a machine on a new principle, by which the work is performed in the most satisfactory way that can be desired, and entirely free of all the objections attaching to those hitherto in use as above described. It has now been in constant operation day and night for nearly two years, and has never required to be stopped for repairs, or in any way gone out of the best working condition.

The leading idea of my improved washer is to substitute a *horizontal*

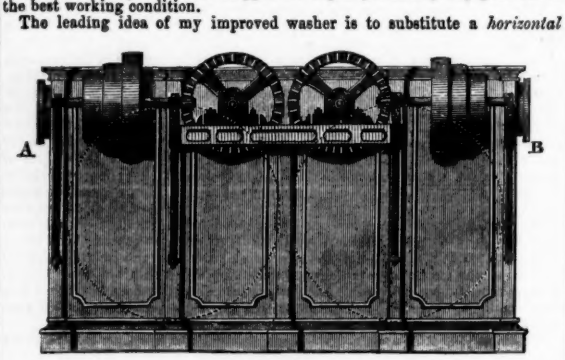


Fig. 2.

instead of a *vertical* passage for the gas while being submitted to the action of the shower of water, whereby it should undergo a thorough shower-bath from a copious stream of water-jets, falling some 20 inches, in an elongated horizontal chamber, instead of 30 feet in height; and that this should be effected without in any way presenting obstruction to its free passage, or throwing any back pressure on the retorts.

The apparatus consists of a cast-iron close cistern, with some external panelling and architectural ornament, measuring about 14 feet long, 12 feet wide, and 6 feet in depth, having a longitudinal vertical partition dividing its interior into two equal-sized chambers, 14 feet long, 6 feet wide, and 6 feet deep. In each chamber is fitted a revolving hollow cylinder, some 10 feet long and 5 feet external diameter, with strong wrought-iron axles, and lignumvitæ bearings fitted inside the principal chest. The periphery of each cylinder is built all round with cast-iron buckets, twelve in number, in the manner of a water-wheel, with this difference—that, with the exception of air-slits in the outside of each bucket, they are close all round the outside circumference. The interior surface of the buckets, about 10 inches less in diameter, is closed in with thin cast-iron plates, perforated with holes an inch apart, and ¼ inch diameter. Each cylinder is mounted at the front end with a spur wheel, actuated by pinions within the chest, for giving to each a slow rotary motion, at about one and a half revolution per minute. The pinion shafts pass by a stuffing-box to the outside, and are mounted with wheel gearing and driving pulleys, which are driven by engine power.

The chests being charged with water to the height of a few inches above the centre of the axles, and the cylinders being set in motion in the direction of the arrow, Fig. 1, which represents an end section of the cylinders, each bucket emerging from the water-line C D, discharges a copious shower of water through the internal perforated plates, into the interior vacant

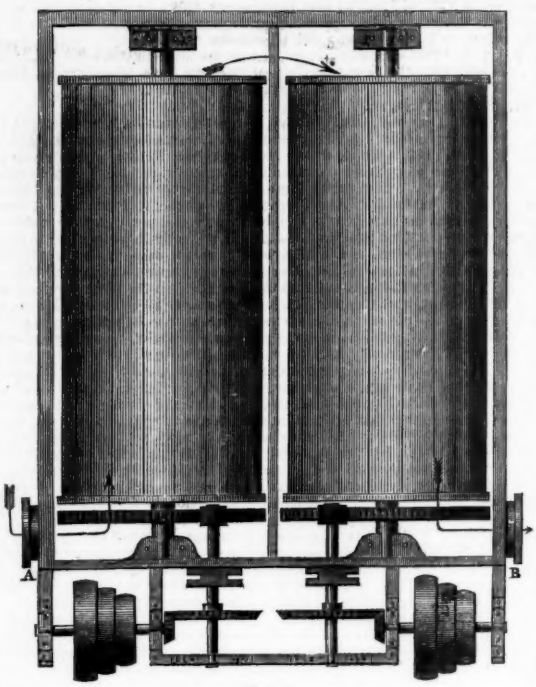


Fig. 3.

space of each cylinder, and each bucket thus discharging its contents is nearly emptied by the time it reaches the surface of the water on the opposite side, as shown on Fig. 1.

Fig. 2 is a front elevation of the machine, showing the outer driving gearing, and the inlet and outlet passages for the gas, A B.

Fig. 3 is a plan of the machine; the entrance for the gas being at A, and the exit at B.

Fig. 4 is a cast-iron plate or screen, closely fitting the sides and top of the chest, and with a semicircular cavity accurately fitting the periphery of the front end of each cylinder, which is turned truly for this purpose, the two lower points of this plate, dipping a few inches into the water, compels the stream of gas entering at A to pass only through the *interior* of each revolving cylinder. On discharging at the back end of the first cylinder, a suitable aperture allows the gas to cross through the middle partition of the chest, and enter the interior of the second cylinder, and after passing forward through its interior it escapes by the outlet at B.

The volume of water thus brought up from the lower depths of the vessel

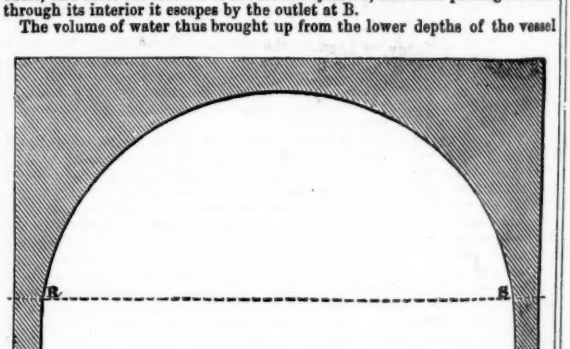


Fig. 4.

amounts to 225 gallons per revolution for each cylinder, being 450 gallons for the two, and the speed making one and a half revolution per minute, there are 675 gallons, or three tons, of water per minute showered by this apparatus upon the gas passing through it in that period of time.

To provide this copious shower in the ordinary washer would require appliances of a formidable character in the way of pumps and other tackle. Here nothing of this kind is required; while the motive power requisite to lift the water about 18 or 20 inches in this machine is less than *one-twelfth* of that required to lift the water 30 feet in the old form of washer.

When the water is changed it is only done partially, and the ammoniacal saturation is never allowed to fall lower than 4° to 5° in strength, and it is usually worked up to 10° or 12° before it is run off; and in this condition it is sent to the chemical manufacturer, for the production of sulphate of ammonia, its relative value being measured by its strength. The highest strength of this liquor attainable with advantage by the old washing apparatus rarely exceeds 5° or 6°.

Coincidently with the washing process, a small stream of condensing oils, if made to flow into the chamber, and being thus agitated along with the water, imparts to the gas an addition to its illuminating elements, as already described.

While no gas can possibly pass through this machine without being thoroughly scoured with water, it is of no less importance that care be taken to prevent this process being overdone to the detriment of its light-giving properties. It is, therefore, very necessary that the amount of water brought into contact with the gas should be regulated in proportion to the volume requiring to be acted upon. This can be done perfectly. By reverting to Fig. 1 it will be seen that, while the space E for the passage of the gas under the shower is well proportioned for, say, 50,000 feet per hour, all that is necessary for adapting it to a lesser volume is to raise the level of water, and by thus contracting the opening, the passage of the gas is proportionally quickened in its current through the machine; and as each cylinder is furnished with separate driving apparatus, one can at any time be thrown off, and the remaining cylinder left to do the work.

The small amount of steam power requisite for giving action to the apparatus is a matter of importance, and is best understood by the fact that either cylinder can be kept in full speed and operation by a crank-handle in the hands of an ordinary labourer, when from any cause the driving power of the engine may be suspended. It may, in conclusion, be stated that while in ordinary machines the small jet holes used for spreading the water are very liable to be choked up by tarry matters constantly flowing through them in one direction, there is no such tendency in this one, owing to the circumstance that the holes are discharging the liquid in one direction while above the level of the water in the vessel, and as soon as submerged they are filled by the flow entering in the opposite direction, and this back and forward action each revolution keeps the holes perfectly clear. The buckets of each cylinder are furnished with ventilating slits in the outer covers, for facilitating the filling and discharging of each bucket with gas and with water alternately as the cylinder moves round. On account of the rapid destruction of brass from chemical action inside, the journal bushes of lignumvitæ, which is substituted, show that it is excellently adapted for the work. An examination, after eighteen months work, shows that this wood has undergone no sensible wear, and it neither requires nor receives lubrication while working under water. I think it due to Mr. Mudie, engineer, Panmure Foundry, Edinburgh, to state that it is in no small measure due to the very excellent and well-fitted gearing, and the construction generally of this machine by him, that so very satisfactory results have been attained by it.

Having thus seen how simply and effectively this form of apparatus brings large volumes of gas and water into intimate contact, it readily suggests itself as a suitable apparatus applicable to the removal of particles of dust or soot, and otherwise for the purification of common air, in conjunction with hot-air stoves, which are now so extensively in use for heating and ventilating large public buildings in our large towns. The removal of mechanical impurities, by passing the air through a spray of water, was effected long ago by Dr. D. B. Reid, in the original ventilating apparatus for the Houses of Parliament, and the water once thus applied thereafter ran to waste. The apparatus is too cumbersome and expensive to recommend its general application. But the mere removal of dust is only of partial benefit, as impurities of a more subtle and dangerous character are often, it is to be feared, poured into large buildings over the heads of assembled multitudes without being suspected, and are no doubt productive of serious evils to health. It need only be stated that, as a rule, it will be found that the supplies of air for heating hospitals, churches, theatres, and other large buildings, are drawn in from near the level of the ground, and in too many cases from the stagnant atmosphere of some back out-of-the-way court, where, in addition to its ill-conditioned state, it not unfrequently gets further polluted by gaseous emanations from cesspools and adjacent sewer gratings. But although care be taken to avoid these palpable errors in the planning of ventilating apparatus, it is quite impossible, in densely populated towns and ill-ventilated localities, to procure pure air for this purpose; yet it may be practicable, with a washing of the kind under notice, to purify it before being passed into a large building. The washing liquid could be charged with disinfecting agents, to render any impurity at least harmless.

Perhaps the most beneficial employment of such an apparatus for sanitary purposes would be in the washing of the air admitted into hospitals, in which case it is too often found that copious supplies of the purest air are insufficient to counteract the infection being constantly generated among the patients, whereby valuable lives are sacrificed in ministering to their relief. The question arises, could not the air so admitted be previously medicated that it might destroy infection? I learn, from correspondence with Mr. H. B. Condy, of London, the patentee of the well-known disinfecting fluid bearing his name, that common air, if exposed to or washed by this fluid before being thrown into hospital wards, would not only be perfectly sweet and refreshing for respiration, but would also carry with it the power of completely destroying or neutralizing the dangerous emanations constantly generated from infectious disease. "Condy's Fluid," otherwise known as "Ozonized Water," has neither taste nor smell. Its peculiar action is in oxidizing every particle of organic impurity with which air or water may be tainted, by the readiness with which its nascent oxygen is liberated in presence of its special food. In this respect it now occupies the highest favour among medical men as the most innocent and actively efficient disinfectant known. The properties of this valuable liquid are very long in being exhausted, and may be applied to impure air time after time before it requires to be exchanged for fresh supplies.

My machine is perfectly adapted to this duty, all that is required being the preparation of a reservoir of water duly charged with it, and the current of air made to pass under a gentle shower thereof before or after it passes the heating-stove apparatus. Of course, continuous rotary action is indispensable; and it is shown that the power of one man is sufficient to discharge a shower of 1½ ton a minute, falling, say, 16 to 18 inches; this will be found, from the ordinary data, to be about one-eighth of a horse power. If, instead of this, say 10 lbs. or one gallon per minute of Condy's fluid should be made to fall upon the passing stream of air in a fine shower, and from a height of six inches, the power requisite to give rotary action to such a machine would not exceed 1-800th of a man's power.

This duty could be performed by various mechanical contrivances, such as a falling weight. I make out that a weight of 400 lbs. falling a height of 20 feet, would be adequate for keeping the machine in action fully six hours, or by doubling the weight and height it would go for twenty-four hours before requiring to be wound up. But a still simpler and more generally available method for deriving the small mechanical power needed for giving action to such a machine may be suggested, and in respect that its action would be unceasing, and require no attention or winding up, might be preferable in most cases—that is, the employment of a small portion of the ordinary town's water supply as the actuating or gravitating weight, say by a series of small buckets fixed on the outside of an endless chain embracing two revolving pulleys, the one situated some 15 or 20 feet above the other, in the manner of a Jacob's ladder, largely employed for lifting grain in spoonfuls from the lower to the higher floors in corn-mills, or like the buckets in a dredging machine—the action, however, being reversed. The buckets on the descending side being successively loaded with water, made to trickle slowly into each after getting over the top pulley, would, with their load, gradually descend one side, and, after discharging at the bottom, ascend light and empty on the opposite side, and give continuous rotation to both pulleys, one of which being connected with, would give movement to the machine. This constant gravitating weight being all that is required from the water, provision must be made to prevent the machine moving round too quickly, and the water being needlessly wasted. A simple pendulum, with escapement action, will be found perfectly applicable for ensuring uniformity and steadiness to the slow motion of the whole apparatus. By estimating the quantity of water necessary for the duty on the foregoing data, its value need not exceed 2d. or 3d. per day at the ordinary water rates; and as it is as applicable for ordinary purposes after it leaves the machine as it was before, it may thus be shown that the cost thereof may be estimated at *nil*. The purpose of my paper is accomplished without going further into such details, and the society will be able to judge whether for such sanitary objects it promises as good results as it has already yielded in the primary duty for which the apparatus has been designed and erected.

IMPERIAL CONTINENTAL GAS ASSOCIATION.

The Half-Yearly Ordinary Meeting of the Proprietors of this Association was held at the London Tavern, on Wednesday, Nov. 27—Benjamin Attwood, Esq., in the chair.

Sir Moses Montefiore, the president, commenced the proceedings by requesting to be allowed the pleasure of moving that Mr. Attwood take the chair.

The proposition being agreed to,

The Chairman called upon the secretary to read the notice convening the meeting, which having been complied with, the corporate seal was affixed to the register of proprietors.

The Secretary (Mr. Albert F. Jackson) then read the report, which was to the following effect:—

The present half-yearly ordinary general meeting of the shareholders has been convened in the usual manner, in accordance with the company's Act of Parliament, for the purpose of receiving a report from the president and directors, upon the affairs of the association, and for declaring a dividend for the half year ending the 30th of June last.

It is with pleasure that the president and directors are enabled to report that the workings at the several stations during the half year now under consideration have continued to be good, and the extent of the business of the association has continued to increase. The total quantity of gas made in that period was, in round numbers, 1608 millions of cubic feet. The total quantity made in the corresponding half year of 1866 was 1495 millions of cubic feet, showing an increase of 113 millions of cubic feet, which is at the rate of about 7½ per cent. With regard to the total number of lights on the 30th of June last, that number was 689,699. On the 30th of June, 1866, the number was 644,134, showing an increase of 45,565 lights, which is at the rate of about 7 per cent. This continued increase in the demand for gas in the towns lighted by the association has necessarily occasioned a very large outlay for works and mains to supply it, and it is gratifying to the president and directors to be able to state, as they are sure it will be to the shareholders to know, that the result of the operations for the half year has been an amount of profit somewhat exceeding that of the corresponding half year of 1866, notwithstanding the reductions which they have found it expedient to make in the price charged for gas, and the many difficult and adverse circumstances with which they have had to contend. The manner in which those difficulties have been overcome or neutralized affords a further proof of the zeal, intelligence, and perseverance of their esteemed chief superintendent on the Continent, Mr. Drory, and of their valuable superintendents and agents acting under him.

With regard to Cologne, it was mentioned in the last report that the dispute with the authorities of the town, relative to a new contract, had been referred to a court of law. That court has since pronounced an opinion in favour of the association, affirming the views taken by the directors. But the authorities of the town have appealed to a superior court, and it remains to be seen what the definitive result will be. In the meantime the association continue to light the town, and have just completed a new gasholder there to enable them to supply all the gas wanted for the coming winter.

In the last report it was stated that the dispute with the authorities at Toulouse as to the time when the concession terminated had been referred to a court of law. A decision has been given adverse to the association, and against that decision the directors have appealed to a superior court, and it remains to be seen with what result. The mayor of the town has, however, threatened to take the matter in his own hands, and to break their pipes, so as to prevent the association supplying more gas. If that determination should take effect the directors will have to close their works, which they would be extremely unwilling to do.

At Amsterdam the terms of a new contract came into operation on the 1st of September last, and the directors have recently had a communication from the authorities of the town, stating that the way in which the lighting is being carried out gives them the greatest satisfaction.

At the other stations there does not appear to be anything to require observation.

It is to the president and directors a source of the greatest pleasure and satisfaction to perceive that the amount of profit realized in the half year has been such as to enable them prudently to declare the same amount of dividend amongst the shareholders as in the preceding year, and to provide a fund sufficient to meet the various and numerous contingencies to which the affairs of this association must ever be liable; the more so because when they first consented to increase the dividend to so great an extent, it was with extreme anxiety as to whether they would be able permanently to continue it, knowing well the prejudicial effect it would have upon the value of the property, and the obloquy and severe reproaches which would be cast upon them if the dividends in the course of a year or two had to be reduced to the former amount. That no such reduction is necessary shows the prudent and sound policy which the president and directors have always adopted in the conduct of the affairs of the association, and which have resulted in such great and unparalleled success.

The president and directors have now the sad duty to record the death of H. J. Montefiore, Esq., who was a director for a great number of years, and who was always most assiduous in the discharge of his duties, and most anxious in all ways to promote the interests of the association, while, by his amiable disposition, he obtained the regard of his colleagues, who deeply regret his loss. The president and directors will take steps shortly to fill up the vacancy thus occasioned at the board.

The Chairman: That, gentlemen, is the report we have to submit to you on the present occasion, and it affords me much pleasure to be able to bring such a statement of the affairs of the association under your notice, and to congratulate you that, in spite of the adverse circumstances which have prevailed, not only in England but throughout all Europe, during the last six months, this association has been able to hold on its successful course, and to produce to you the large amount of profit which it has been our good fortune, I must call it, to obtain, notwithstanding the difficulties we have had to undergo. I will not now take up your time by any additional observations on the matter, but, if any gentleman is desirous to ask a question, or to seek further information which it is in my power to give, I shall be very happy to answer him. In the meantime, my motion will be—"That the report now read be received and entered on the minutes."

Mr. Beck said it was almost with fear and trembling that he rose on the present occasion, for, if he recollected rightly, the chairman, the last time

that he spoke, characterized his remarks as "cantankerous." He had no wish to say anything against the members of the board; on the contrary, he had every desire to support them. But he did wish to draw attention to the state of the association, as far as he was able to judge from the documents placed before him. It was now five years since he became a proprietor of the Imperial Continental Gas Association, and he became a proprietor because he believed it was a good investment. He had found it so, and he believed the course he had pursued had made it far better. He now wanted to call attention to the facts in relation to their position. The share capital of the association was £980,000; there had been raised on bonds £125,000; and there had been written off profits £135,000; making the total capital on the balance-sheet of £1,250,000. There had been also taken from profits up to the present time £1,005,000, being £25,000 more than the amount of the share capital; and he had always understood the directors adopted that plan as a safeguard against contingencies and accidents. It would be remembered that, when he first attended these meetings, he asked Mr. Attwood how long that system would continue, and he was answered that the time would come very shortly when the directors would be able to give the proprietors a better dividend. He had long been of opinion that that time had come, and that it was not fair to take from the proprietors £1,005,000 to protect a capital of £980,000. As he had said, the only reason he had heard for this course was that it was a safe policy. Let them see whether that was correct. In December, 1862, the plant of the company was worth £1,586,533, the unappropriated profits were £586,742, and the profits divisible, as shown by the scheme, were £141,324. In June, 1867, the plant was worth £1,976,444, the unappropriated profits were £1,005,988, and the divisible profits £141,534, being only £200 more than when the unappropriated profits were more than £400,000 less, so that literally they had appropriated £400,000 out of profits to get £200 increase in their income. These were the directors own figures, and he would ask whether it was a good policy which—he would not say took this money out of the shareholders pockets, but prevented this sum from going into their pockets to gain so small an advantage. Again he would compare the present half year with the corresponding half of 1866. He would not name the towns; he was always anxious to avoid that in discussing as a question of principle whether the shareholders were entitled to an increase of dividend. He found that in one city the profits for the last half year, as compared with the corresponding half of 1866, had decreased by £5400, whereas there was an increase in the capital of £10,000. In the next city there had been an expenditure of £9000, and an increase in the revenue of £3200—a very good outlay. In the next city there was a deficiency of £280 in the revenue, and an increase in the capital of £2000. In the next there was a decrease in the income of £1600, and an increase in the capital of £13,800; in the next there was a decrease in the income of £90, with an expenditure of £4300 additional capital; in the next there was an increase in the income of £1300 for an expenditure of £6500; in the next a decrease of income to the extent of £80 on an additional capital of £200; in the next, an increased income of £800, with an increased capital of £11,500; in the next, an increased income of £2200, with an increased capital of £2000; in the next, an increased income of £2200, with an increased capital of £600 only; in the next, there was an increased income of £900, with an increased capital of £2500; in the next, a decreased income of £3800, with an increased capital of £8500; in the next, a decreased income of £50, with an increased capital of £2500. So that literally for £100,000 expended the company realized about £1100 additional income. This was the plan which was said to be so safe and so secure. It might be secure, but it did not answer the purpose of the shareholders to lay out so large a sum of money to obtain so inadequate a result. He felt perfectly sure that any observations he made on the subject would be utterly useless unless he could convince the directors that a new system ought to be adopted. At the same time he thought it right to call attention to the facts, and there he must leave the matter.

Mr. WILMOT KNIGHT said he would not endeavour to follow the honourable proprietor in the historical sketch he had given, and for the best of reasons, that he had not made the synopsis of the accounts which he had done. But he would deal with the broad facts, and it seemed to him that he could make a suggestion the adoption of which would go far to reconcile the two sections of the proprietors—for two sections there were upon this point, although they were all united in their desire to promote the interests of the undertaking. It was an undoubted fact that the association had a million of money which *primâ facie* belonged to and ought to be distributed among the proprietary body. For reasons hitherto advanced by the directors the majority of the proprietors had been convinced that that sum ought to remain intact; but the chairman, as well as his very able predecessor, had admitted that the time would probably come when a distribution of that money should take place. His (Mr. Knight's) suggestion was this—and he would put it in the form of an inquiry—whether, supposing that, between the present time and the date when the annual assembly of the association would be held, no unforeseen circumstances should arise, the board would be prepared to come before their constituents and recommend the distribution of a portion of that sum, either by way of a cash bonus or by writing up the shares? He confessed that he should prefer the latter alternative, and he would state the reason why. It was well known how much rot and rant was spoken in these days about cheap gas and the power of producing it at the lowest cost. They knew also how infectious was humbug, and that continentals might become inoculated with it. It was of the last importance that in any printed price current the capital with which the association was working should be accurately stated. That was certainly not the case at present, and it was desirable it should not continue to appear that the proprietors were receiving a dividend of 16 per cent., when, if the capital were rightly stated, they were only getting a return of something like one-half of that amount. He was anxious to speak with the greatest respect of those gentlemen who, with consummate ability, had brought the association to its present satisfactory position, and he made his suggestion not taking part with either side in the controversy which had so frequently been carried on at these meetings.

Mr. PALMER said he regarded the policy of the directors as the wisest that could be adopted, looking to the extreme risks of an undertaking of this nature in respect to possible competition and the continual large outlays to which they were subject. He thought there was rather a confusion of terms in respect to the reserves which were made out of the earnings of the association. He could not consider that as really capital abstracted from the proprietors; it was only a portion of revenue appropriated from time to time to maintain the works of the association in the various towns which they supplied. The distress and ruin which prevailed in the railway interest arose entirely from the policy of the directors in dividing the whole of the nominal earnings of the concern, instead of appropriating a portion to the maintenance of the undertaking. The fact that no earnings of any importance had been made upon the great reserves of this association, proved that those appropriations of revenue had been absolutely necessary to maintain their present position. He certainly did not think it was wise that it should appear as though the association was paying 16 per cent. in dividends; but any arrangement which could be made to show that, having expended so much money, they were only paying 7 or 8 per cent., was a matter of detail for the gentlemen on the other side of the table, who were much more capable of dealing with the question than he was.

Mr. MICHAEL desired to say a few words, following up the remarks of Mr. Beck. Looking at the question from that gentleman's point of view, it rather tended to support the directors in the line of conduct they had adopted. If they looked at it from the point of view that it had been essentially necessary to expend these sums of money from time to time in the service of the company, and that the revenue had not consequently increased, it was a powerful argument in favour of the policy of the directors. He had always felt, when speaking at these meetings, the greatest anxiety lest it should be supposed that he spoke at all in antagonism to the gentlemen whose skill and ability had been so manifestly displayed in managing the extensive and complicated affairs of the association. It was well known how extremely difficult it was to manage gas-works in this country, and those difficulties must be very greatly increased in dealing with a large number of stations on the Continent. He had, therefore, always felt, speaking on behalf of a section of the proprietors, that their best thanks were due to the directors for the zeal and ability with which the affairs of the association were conducted. At the same time, though free to acknowledge that, he had felt, as an independent proprietor, that it was his duty to point out what he conceived to be an erroneous principle in arriving at the same conclusion the directors had arrived. It was evident that profits which did not come into the pockets of the proprietors, but which nevertheless were profits, and might be divided under other circumstances, but which were appropriated to the extension of various works for which otherwise capital would have to be raised, that those profits so devoted were as much capital, in the proper sense of the term, as though it had been obtained by calls upon the proprietors. He thought he might appeal confidently to the chairman, and ask whether that proposition was not a correct one looked at logically or commercially. For what purpose was the large sum of £43,000 taken out of the earnings of the last half year and added to the £1,000,000 already gathered together? It was not for the maintenance and conservancy of the works; it was not to meet any contingencies, for during the whole time he had studied the affairs of the association no such contingencies had arisen. What, then, was the object? Why, as stated in the report, the extension of the works. To him it appeared that this was acting upon a false principle altogether, and one which was likely seriously to affect the interests of the proprietors; and for this simple reason—and in stating it he was only going over the ground already taken—that it was thus made to appear as though £1,000,000 of capital had been earning £141,000 in the half year, whereas in truth £2,000,000 had been devoted to that purpose. He thought that when shareholders came forward to complain of the policy of the directors they should be prepared to recommend some scheme which they believed would be for the benefit of the association. He was prepared with his scheme, which was a very simple one. It might be wrong, but he felt bound to lay it down for the consideration of the directors, believing that it was, at all events, one which could not in any way affect the working of the concern, or encumber the board in the management of their affairs, while it would give to the shareholders something which would represent that which was continually being taken from them. He held that the amount earned in the current half year ought to be divided among the shareholders for the time being, who were the persons that had earned the profit; or that, if any portion of that profit were appropriated as capital, there ought to be something given to them to represent the amount so abstracted. He assumed for the moment, with the directors, that it was essential to the interests of the undertaking the sum of £43,000 should be taken from the £141,000 in order to provide against any contingencies, or that future extensions of works might be made, or that if the whole £141,000 were distributed as dividends it would be necessary to provide £43,000 for this purpose. Then he would say to the directors, "If you will persist in not writing up our capital as you ought to do, pay us the whole of the profits, and call upon us for £43,000 in the way of additional share capital to meet these contingencies." Who would object to such a call when the amount so paid would bear 20 per cent. interest. He was not speaking without book, but from calculations made, when he said that if the profits were so appropriated, and the money necessary for the directors called up, they would be able to pay 20 per cent., not only upon the old share capital but also upon the new capital—and he would ask any shareholder in the room whether that would not be a great boon. And how would the directors be in any way damnified in carrying out such a proposition? Could it be said that anything was being abstracted which was necessary for the effective carrying on of the works? By no means, because the shareholders would be providing exactly the same sum of money in the shape of new capital. How then, it might be asked, would the shareholders be benefited? If the directors were carrying out works in a proper manner, for every increment of capital added to the original capital there ought to be a corresponding increase of profit. If they were not, then it would be for the directors to show how it was that, having added £400,000 to the capital within a short time, that £400,000 was absolutely barren in bringing any fresh income to the association. Referring to the remarks made by Mr. Beck, he might point out that £40,000 had been paid for the interest of the late Mr. Wolverly Attwood in the Amsterdam works. What was there in the pockets of the shareholders to represent that £40,000? And how was it that, £40,000 having been added to the property of the association at Amsterdam, there was, instead of an addition to profits in that town, a diminution during the last half year? He thought these were pertinent questions, and required to be answered; but he came back to this point, that supposing the directors to be right in continually expending fresh capital, that capital should not be created by the appropriation of profits, but should be obtained by making calls from time to time, while the whole of the profits were distributed to the shareholders. It had been said that the association had no power under their present Act of Parliament to raise the capital to the extent for which he argued. Granting that to be the case, what was to prevent the directors going in this or the ensuing session of Parliament for an alteration of the Act under which the association was constituted, so as to allow them to amend the rules affecting capital, and thus give the shareholders the fair advantage derivable from the profitable working of the undertaking. There was no one to oppose such a proceeding; the application to Parliament would be a mere formal affair, and in the result the capital of the association would be properly represented in their books, which he contended it was not at the present moment.

Mr. YEATMAN said he thought a great deal of this discussion arose from

what he must call the very erroneous way in which the accounts were stated. The profits for the half year, according to the statements of the directors, were something like £140,000, out of which about £43,000, according to custom, was put aside for contingencies. Of course, in an undertaking of this character, there was always a considerable depreciation of plant taking place, which, as prudent men, they very properly provided for by writing off a certain amount from the earnings; but, as he submitted, this was not properly and clearly stated in the accounts. At the last half-yearly meeting he asked the question, and stated that he should repeat it on this occasion—How was this sum of money expended? He wished the directors to distinguish between the money appropriated for fresh works and the money expended in merely keeping the present works in good condition. He thought they ought to come before the proprietors and say that of this £43,000 a certain amount, say £30,000, would be required in maintaining existing works, and £10,000 or £12,000 only for extensions. If this were done a great deal of discussion would be avoided. There was no doubt that half year by half year they had gone on adding a great deal more capital than was shown, and if they were now to write up a fair proportion of the reserve to capital, and at the same time a fair amount for the depreciation of works which was continually taking place, it would be a much more satisfactory proceeding. It was clear that with all their extensions they were not now earning much more than they did five years ago. Of course, if the directors had been obliged to lower the price of gas in all the towns, it was reasonable to suppose the profits would be interfered with; at the same time it must be remembered that extensions were constantly going on, and the quantity of gas made was continually increasing.

Mr. STOKES said it always distressed him, when attending those meetings, to hear the policy of the directors impugned in the way it had been by previous speakers. When he looked at the share list and saw this association standing at the head of every enterprise of a similar character; when he remembered that half year after half year the proprietors received a good and steady dividend; and when he reflected upon the continued prosperity of the enterprise while all around them was fluctuating and uncertain, it did strike him that it was an act of great injustice to the gentlemen who sat at the board, for shareholders to come forward as some had done on this and other occasions to find fault with the administration of their affairs. He had himself lived sufficiently long, and had suffered enough in the past, to make him feel grateful to those who successfully managed undertakings with which he was connected. It certainly seemed natural to expect that the result of the large outlay which had been made on the stations of the association would be a profit and not a loss; but, while making complaint on this head, those who had spoken seemed to forget that but for this outlay the loss would have been very much greater. The directors were bound to keep the works in a state of thorough efficiency, and he was sure Mr. Drory, their indefatigable manager, would tell them that, if this was not done to the satisfaction of the municipal authorities, there would be a considerable falling off in their receipts. He was quite sure that the directors, who held a very heavy stake in the concern, would be only too happy to increase the amount of the dividend if they could see their way to do so with safety, because a high rate of dividend would be to them a large sum of money. His advice to the shareholders was, "When things are well, let well alone." It was the discontent of shareholders, the craving after "1 per cent. more" and "2 per cent. more" which had ruined half the commercial enterprises of the world, and, notwithstanding the widespread melancholy experience of the past, seemed to threaten many thriving concerns of the present day.

A PROPRIETOR denied that in submitting these points for the consideration of the board there was any desire on the part of shareholders to detract from the honour due to the directors. They were all too proud of the gentlemen who managed affairs to meet them with any ill feeling; but they thought, if things were to be preserved in a healthy condition, they must be thoroughly ventilated at these meetings.

Mr. AIRD said he believed the majority of the shareholders would concur in the observations of the last speaker but one, and regret that the conduct of the directors should be impugned in the way it had been. It was very easy for a gentleman to bring forward an array of figures, and draw certain conclusions from them, because in a meeting like that it was impossible to test the accuracy of the one or the other. It was complained that the directors had incurred large expenses, which had not yielded an adequate return. Perhaps they had; but, supposing those additional expenses had not been incurred, what might have been the loss? It was not within the capability of the shareholders to judge of the expediency of this expenditure; it was a matter which must be left in the hands of those who were responsible for the satisfactory working of the concern. He believed the proposition to appropriate more of the earnings of the association in the shape of dividends, and to make calls for the purpose of raising capital, would not be acceptable to the majority of the shareholders.

Another PROPRIETOR remarked that the profits of the last year were sufficient to pay a dividend of £11 per share upon the 28,000 shares of the association, but the amount received by the proprietors was only £7 per share, so that a sum equal to £4 per share had been added during that period to the contingent-fund. He thought the time had now come when the dividends might be increased to £8 per share per annum, or even £10, which would still leave a very large sum to be set aside for contingencies. Under present arrangements, a large proportion of the earnings of the company were being reserved for the advantage of a future generation of shareholders.

Mr. PRICE commented upon the remarks of Mr. Stokes, and insisted that what he and other shareholders had urged upon the board was not an increase of dividend, but the policy of having the capital expended upon the works adequately represented in the share register. He wished to know how it was that in the accounts for this half year no item appeared for dividends on Consols; and also how it was that the profit on the Amsterdam works was so much less on this occasion than on the last. Both these inquiries could, no doubt, be satisfactorily explained, and the proprietors would be very glad to learn the facts respecting them.

The CHAIRMAN said during the last half year the money invested in Consols had been necessarily reduced, for the purpose of paying the dividend to the proprietors. The dividend paid on Consols was now included in the general item of "Interest received in London." Mr. Beck stated that the directors had added to capital £400,000, upon which a very inadequate return was realized; but, with his experience in gas matters, Mr. Beck must know that when a large reduction had been made in the price of gas, as was the case in the towns supplied by the association, the amount of profit must necessarily be reduced also.

Mr. BECK reminded the chairman that the accounts did not show that reduction.

The CHAIRMAN said the fact had been continually stated by the directors, and that really was the explanation of comparative unproductiveness of the outlay. With reference to the point in the argument so frequently brought forward by Mr. Michael, it appeared to him to resolve itself into the question whether the money expended from time to time had been judiciously expended or not. If it had been well expended, then it did not matter to the shareholders whether the money came out of one pocket or out of the other. If it had been badly expended, and the directors were incompetent to invest it properly, that was a question which the shareholders might take up and discuss. But he was prepared at once to meet such an assumption with a positive contradiction, and he was certain that nothing could be a better proof of the wise policy of the board than the fact of the large dividend they were able to recommend on the present occasion. Not one of the railway and joint-stock companies were able, despite of the condition of commercial affairs, to uphold the dividends they had been accustomed to pay; but the directors of this association, because of the provision they had made to meet contingencies, had not been compelled to diminish the rate of dividend. A good deal had been said about contingencies. The directors had often told the proprietors what happened at Marseilles, where the concession was taken out of their hands, and their works, representing an outlay of £80,000, were lying idle. That day they had had to report an unfortunate state of things at Toulouse, where the mayor had threatened to break their pipes, which would have the effect of driving them out of the town. What would the proprietors say if the directors came forward and told them there was a loss of £80,000 at Marseilles, and of £70,000 or £80,000 at Toulouse, and therefore they must make a call? The board had protected them against all those difficulties, and had brought them their dividends in despite of these adverse circumstances. If the proprietors were prepared to say that the board did not manage affairs properly, let them put them in better hands. He should be quite willing—nothing would give him greater pleasure than to see the management in better hands. He had a very large stake in the undertaking; it was a question which affected him deeply, and if he could get more profit out of the concern he should be only too glad to get it, and therefore he should be grateful to any one who would show how it was to be done. He had listened attentively to all that had been said from time to time in that room, but never had he heard how by possibility things could be managed better for the proprietors than they had been. The dividend on the paid-up capital had been 21 per cent. per annum, and in addition to that the proprietors had received in one sum £291,000 as a bonus. He thought that was a state of things which did not expose the directors to a charge of mismanagement. They might look round London, or even over all England, and not find a company yielding a better return than that; therefore he was quite convinced that the mode in which the affairs of the association had been conducted was one of prudence and sound policy. It had answered and succeeded wonderfully, and he was quite content to let it remain as it was. The proprietors might be assured of this, that whenever the time came that they could prudently increase the rate of dividend, no one would be more pleased than the directors; but they must remember, as he had often stated, that dividends came out of profits, which profits were realized by making gas, and they could not increase those profits by making shares. Mr. Michael's proposition was to divide the profits over a larger number of shares. They had only £98,000 to divide, and whether that sum were divided upon 28,000 or 42,000 shares in the hands of the same proprietors could make no practical difference to the result.

Mr. BECK asked where reductions in the price of gas had been made during the last half year.

The CHAIRMAN said at Bordeaux and at Vienna, as well as at Amsterdam; at the latter place the reduction had been considerable.

Mr. KNIGHT said the chairman had dealt with his suggestion in one way, but he still pressed the inquiry, whether, if no unforeseen calamity occurred between the present time and the time of the annual meeting, the directors would be prepared to recommend a distribution of a portion of the money?

The CHAIRMAN replied that he could make no terms as to what would be done on another occasion. All he could promise was, that whenever the directors saw a possibility of increasing the dividends they would certainly do it for their own sakes as well as for the sake of the proprietors at large.

Mr. KNIGHT again asked whether the directors would be prepared to come forward and recommend the distribution of some portion of the £1,000,000 which they had in hand in the shape of capitalized profits?

The CHAIRMAN said he thought he had told the honourable proprietor that they would certainly not come forward with any proposition of that kind. They had taken counsel's opinion on the subject, which was to the effect that they could not do so. He knew Mr. Michael would say that they should go to Parliament and obtain power.

Mr. MICHAEL thought the chairman should state that the opinion of counsel was that it could be done with the consent of all the shareholders.

The CHAIRMAN said that was quite true, but such consent would never be obtained. If no one else objected he would himself be the one to do it, because he believed it would not be for the interest of the association.

Mr. MICHAEL was surprised to hear that statement, because the chairman had only just mentioned that on one occasion £291,000 was distributed as a bonus.

The CHAIRMAN said that took place on the amalgamation of four undertakings, but there was nothing of that sort now.

Mr. PRICE repeated his inquiry respecting the diminution of profits at Amsterdam.

The CHAIRMAN said it arose from the reduction made in the price of gas, and from the large expenses going on in reconstruction. The public lighting was now two or three times what it had been, and the price charged was less than one-half.

The motion for the adoption of the report was then put and carried.

On the motion of the CHAIRMAN, it was resolved—"That a dividend of £2 10s. per share and a bonus of £1 per share be now declared for the half year ending the 30th June last, and that the same be payable, free of income-tax, on and after the 15th December next."

On the motion of Mr. MICHAEL, seconded by Mr. BARBER, it was resolved—"That the best thanks of the meeting be given to the president and directors for their able management of the affairs of the association, and to the chairman for his conduct in the chair this day."

The CHAIRMAN, in acknowledging the vote, said: Gentlemen, on behalf of my brother directors and myself I beg to return you our sincere thanks for this mark of your approval of our conduct in the management of the company's affairs. I can assure you it is a very onerous and a very arduous task, but we have undertaken it willingly and cheerfully, and I am proud to say we have done it successfully. You may rely upon it we shall not relax in our endeavours to promote the prosperity of the association. I am quite sure that whatever remarks have fallen from Mr. Michael or other honourable proprietors, they do not bear the directors any ill will, nor do those

remarks excite any such feeling in the minds of the directors. We are all glad to see Mr. Michael at our meetings, and do not in the least object to his observations.

On the motion of Mr. WALMISLEY, seconded by Mr. J. G. PILCHER, a vote of thanks was given to Mr. G. W. Drory, the general superintendent of the affairs of the association on the Continent, for the ability with which he attends to the business of the stations.

The proceedings then terminated.

ORIENTAL GAS COMPANY, LIMITED.

The Ordinary General Meeting of the Shareholders of this Company was held at the London Tavern, Bishopsgate Street, on Monday, Nov. 25—WALTER THOMAS FAWCETT, Esq., in the chair.

The SECRETARY (Mr. A. Hersee) having read the notice convening the meeting, the following report and statements of account were presented:—

In submitting to the shareholders a statement of accounts for the twelve months ending the 30th of June last, the directors have the pleasure to state that the progress of the company has been such as to satisfy their fullest expectations.

It was announced in the last report that about 200 street-lamps of the existing contract remained to be put up, but this number was subsequently increased to 265, to which must be added 33 public lamps erected on the Maidan by order of the authorities, making a total increase of 298 public lights during the year. Since June last an order has been received from the authorities for the erection of 304 additional public lamps.

In private lighting the results have been very satisfactory, and an increase of 3003 burners has taken place. The native community are more largely availing themselves of the advantages of gas, and the cooking-stoves sent out by the company are being gradually introduced. The following were the total number of lights on the 30th of June last:—Public, 2311; private, 14,626; compared with 2013 and 11,623, respectively, at the corresponding period of the previous year.

Eight miles of additional mains have been laid, and from the number of consumers already obtained in the new localities, the greatest encouragement is afforded as to the further extension of the company's operations. Several gas-fitters have commenced business in Calcutta, to whom every assistance will be afforded; and it is expected that by their endeavours the consumption of gas will be more rapidly increased.

The following are amongst the buildings fitted for gas since last report:—The Wesleyan Chapel; Town-Hall; Roman Catholic Cathedral; Roman Catholic Church, Boitakhana; National Bank; St. John's Church; and St. James's Church. The fitting of the General Hospital is in hand, and estimates for the Native Lunatic Asylum have been invited and sent in.

You have been already informed that the basis of contract for the lighting of Howrah had been mutually agreed upon between this company and the authorities. Owing to the delay which usually attends negotiations in India, and in spite of the energetic and persevering efforts of your executive, the contract was not finally concluded till the month of August last. The directors have the best reason to believe that the terms obtained will ensure a profitable return on the capital to be expended.

The committee in Calcutta has undergone some change since last report, Mr. Goodenough having retired from India, and Mr. Stuart having undertaken duties at a distance. The directors have appointed as their successors John Hutcheson Fergusson, Esq. (of Messrs. J. H. Fergusson and Co.), and Robert Chapman Noble, Esq. (of Messrs. M'Killop, Stewart, and Co.), and these gentlemen are cordially co-operating with Mr. Beckwith and Mr. Mellor.

The board are anxious to bear testimony to the zeal and ability manifested by the committee, and to the attention they have given to the affairs of the company; they also desire to acknowledge the important services rendered by Mr. Mellor as engineer and manager; and are confident that, under existing arrangements, the undertaking will continue to prosper.

The general revenue account shows a balance available for dividend—after adding £1000 to the reserve-fund—of £12,192 5s. 10d., from which the directors recommend a distribution of 6 per cent., free of income-tax, payable on the 3rd day of December next, making, with the interim payment of 3 per cent. on the 5th of June last, a total dividend of 9 per cent. for the year.

The directors who retire by rotation are Lewis Cubitt and Walter T. Fawcett, Esqs., and the retiring auditors are Henry M'L. Backler and John R. Peill, Esqs., all of whom are eligible for re-election, and offer themselves accordingly.

Balance-Sheet, June 30, 1867.

Dr.				*Cr.*			
To 30,000 shares of £5 each	£150,000	0	0	By Amount of plant on June 30, 1866	£151,150	2	11
30,000 ,, ,, (£1 paid)	30,000	0	0	Expended during year ending June 30, 1867	20,023	5	10
	£180,000	0	0		£171,173	8	9
Loans on debentures	18,450	0	0	Cost of plant to June 30, 1867	£171,173	8	9
Unclaimed dividends	404	15	2	Amount due to the company	6,712	4	1
Wear and tear account—				Value of stocks, viz.:—			
Balance, 1866	£ 931	5	8	Coals	£ 2,783	17	0
Appropriated, 1867	1,118	4	1	Lime and purifying material	51	15	0
	£2,049	9	9	Products	1,047	5	6
Less—repairs and expenses for the year	1,707	8	3	Meters	1,092	3	0
	342	1	6	Fittings	10,541	13	7
Reserve-fund—				Pipes	6,926	11	4
Balance, 1866	£1,000	0	0	Services	1,377	4	1
Twelve months interest, at 6 per ct.	60	0	0	Horses, conveyances, &c.	404	10	0
	£1,060	0	0	Sundry stores	2,377	12	3
Appropriated, 1867	1,000	0	0	Office furniture, &c.	432	10	0
	2,060	0	0		27,035	1	9
Amount due by the company	5,267	6	4	Balance of passage expenses	270	1	8
Balance from general revenue account	12,192	5	10	Ditto in Calcutta	£2,103	7	7
				Ditto in London	1,606	16	6
				Bills receivable	9,815	8	6
					13,525	12	7
	£218,716	8	10		£218,716	8	10

Profit and Loss, or Working Account, for the Twelve Months ending June 30, 1867.

Dr.				*Cr.*			
To Cost of coal used	£8,622	16	6	By Gas-rental	£28,994	4	3
Ditto of lime and oxide used	97	15	8	Coke, tar, fittings, &c.	6,890	9	2
Salaries in India and London	988	13	10		35,884	13	5
Engineers salaries in India	1,339	5	8	Transfer fees	23	3	0
Directors and auditors	913	0	0				
Wages in India	2,148	2	5				
Passages of engineers and workmen	279	1	8				
Indian licence-tax	200	0	0				
General expenses, including rent, gharry expenses, postages, advertising, printing and stationery, medical attendance, insurance, and petty charges	1,085	17	6				
Loss on exchange	256	6	8				
Wear and tear account	1,118	4	1				
Reserve-fund	1,000	0	0				
Bad debts and allowances	93	19	6				
	18,134	3	6				
Balance	17,773	12	11				
	£35,907	16	5		£35,907	16	5

General Revenue Account, June 30, 1867.

Dr.				*Cr.*			
To Dividend of 5½ per cent. balance of 8½ per cent., for the twelve months ending June 30, 1866, declared at the general meeting, November, 1866	£9,693	15	0	By Balance on June 30, 1866	£10,118	11	0
Interim dividend of 3 per cent., on account of year ending the 30th of June, 1867, paid the 5th of June	5,400	0	0	Ditto on profit and loss account	17,773	12	11
Income-tax	173	0	4				
Interest on debentures £645 18 3							
Less interest earned 212 15 6	433	2	9				
	£15,699	18	1				
Balance	12,192	5	10				
	£27,892	3	11		£27,892	3	11

The CHAIRMAN, in moving—"That the report and accounts now presented be received, adopted, and entered upon the minutes," said it would not be necessary for him to make any lengthened remarks. He hoped that the statement in the first paragraph of the report—"that the progress of the company has been such as to satisfy the fullest expectations" of the directors, would meet with a cordial response amongst the shareholders. The increase in the number of lights during the past year was, as would be seen, very large; for, whereas the average increase in the public lights from the opening of the works had been about 193 per annum, during the last twelve months it had been no less than 298; and whereas the average increase in the number of private lights had been 1137 per annum, during the last twelve months it had been no less than 3003. It appeared, therefore, to the directors, that the company was taking a firm root in Calcutta, and that, however gratifying their present position, they might reasonably hope their operations would increase in the future in a much greater ratio. There was one very pleasant thing in connexion with their working—viz., that the native consumers were coming amongst them to a larger extent than formerly. Last year they had the largest addition of native consumers that had been obtained since the commencement of the company, and he was happy to state that during the first nine months of the present year the additions in this direction were greater than during the whole of the previous twelve months, and this proportion still continued. He looked upon this as a very important point, because when they went to Calcutta originally they were told that in all probability they would never be able to surmount the prejudices of the native population, and induce them to burn gas at all. The fact was, that they were consuming gas very fast, and were availing themselves of it in larger numbers every year. Another satisfactory feature in the company's affairs was that they had only been obliged to lay 8½ miles of new mains during the last twelve months, whereas the year before they had to lay 18½ miles. This showed, again, that the excess of lighting had come as much, or even more, upon the old mains than upon the new. The company had now about 80 miles of main laid. For some years past they had had the gas-fitting business in their own hands; but they now found there were persons in Calcutta desirous, not of competing with them, but of taking some of the profits it was supposed the company realized in this department. Two or three persons had lately begun business in Calcutta as gas-fitters, and the company were giving them every encouragement, because they felt that their own work was not so much that of gas-fitting as gas manufacturing, and all they wanted was to have their gas consumed as much as possible. By one of the paragraphs in the report it would be seen that the company had commenced

lighting some very important buildings. Every one of these was a customer for upwards of 50 lights, some of them for more than 100, and a few for even a larger number than that. Every acquisition of new customers in this way was therefore a matter of importance. The next paragraph in the report referred to a subject which demanded serious consideration—viz., the contract for the lighting of Howrah. It had always been a feeling on the part of the board that if gas lighting was to be introduced into Howrah it should be introduced by the Oriental Gas Company. As the proprietors were aware, Howrah was situated on the other side of the Hooghly, and was, in fact, almost a part and parcel of Calcutta, although under a different municipality. Its immediate neighbourhood led the directors to think that it would not be prudent for them to have a rival so near the throne. They had, therefore, incessantly laboured to that point; and when he stated that they had been 5½ years in arranging the contract, and that it was not completed till August last, the proprietors would at least give them credit for perseverance in the matter; and that, in their original notion with regard to the place itself, they would agree that the board were in the right in determining not to have any one there but themselves. It was, they believed, a very important contract, and it was to extend from 1870 for a period of 21 years. The prices, too, were very satisfactory, and the company would commence operations there with a guaranteed consumption of the value of £2000 sterling a year. Howrah, as those connected with India—and more especially those who had been there recently—would be aware, was increasing very much in importance, and it was very natural it should increase, because the great terminus of the East Indian Railway was there, and of course a considerable neighbourhood was sure to gather around such an establishment. The company had for some time possessed a piece of land there, as they thought it would be a very awkward thing to have the contract settled, and liberty to erect gas-works obtained, without having secured a suitable position on which to place them. Accordingly they obtained, with some difficulty, a valuable piece of land, in extent 14 acres, and they would have a railway siding into the works, which was a very important matter, as it would enable them to bring coals direct from the pit's mouth up to the retorts—an advantage they did not possess on the Calcutta side of the river. In all probability, therefore, the cost of coals would be cheaper there than at the existing works. Altogether, the directors congratulated themselves and the proprietors upon having secured so excellent a site and so valuable a contract; and he had no doubt that hereafter they would be receiving a very handsome return upon this portion of their investment. He was happy to state that the committee which was instituted in Calcutta some time ago was working with admirable effect. The knowledge which these gentlemen possessed of the population and of the authorities of Calcutta, and the cordiality with which they were co-operating with the officers of the company, rendered them of great service to the undertaking, and the board had every reason to be satisfied that that committee was formed. The proprietors had probably seen in the newspapers an account of the cyclone at Calcutta. The directors had not had time to obtain the particulars, but a telegram received by them conveyed the gratifying intelligence that the works of the company had escaped almost unscathed—in fact, with the exception of a little broken glass, they had sustained no damage at all. With regard to the accounts, it would be perceived that the "Wear and tear" had been rather in excess of the previous year. The directors had always intimated that it was their desire to have a balance to the credit of that account, but the necessity for it had not shown itself until the last year. Then there had been a considerable amount of repairs to make—some of them, perhaps, a little out of the ordinary way—and the directors had been obliged to go upon the fund in addition to using the sum taken out of profit and loss every year. The wear and tear fund, however, still carried over a balance. He only mentioned this to show the necessity for the creation of that fund, so as to be able to meet any extraordinary charges which might come upon them. The "Amount due to the company" had decreased considerably, proving that the committee in Calcutta, acting under instructions from home, had taken great pains with the view of keeping the arrears under. With regard to the "Amount due by the company," that had decreased nearly £5000—they had, in fact, made it as small as possible—and when the extent of the company's transactions was considered, he thought it would be looked upon as very moderate. The quantity of coals consumed had, of course, increased; but there was a very satisfactory point in connexion with it—viz., that the cost was one-half per cent. less upon the rental than last year. The "Lime and oxide used" also cost less than before; and there was only one item on the debit of profit and loss which was in excess of the amount in the last account. It was a matter over which the board had no control—viz., the rate of exchange. Up to the present year they had made a profit upon it; this year there was a loss of £236. On the other side of the account it would be seen that the expenditure on capital account had been less by upwards of £7000, owing to the circumstance he had already named—that they had not been called upon to lay down so many mains. The amount due to the company was nearly £3000 less; and when he mentioned that of this sum no less than £2400 was the rental for June—the last month included in the account—he thought this also would be considered very satisfactory. The "Value of stocks" had been brought down by the sum of £5600 below what it was last year, which he thought was a point worthy of attention. Another item was that of "Passage expenses." This was a sort of suspense account, to which very little had been added in 1867. The directors had been in the habit of writing off one-third of the balance of this account every year, but last year, as they had to put very little to it, they wrote off one half, and, in all probability, the item would altogether disappear in the next year. With respect to the working of the concern, he might mention that in 1866 they were working at 48 per cent. profit, and to those who were acquainted with the manufacture of gas it was hardly necessary to say that as time rolled on, and the company progressed and increased its business, the per centage of profit would increase. It had done so materially during their past history. In the first year of their existence they had only 29 per cent. of profit out of revenue, and that was diminished in the second year on account of a large outlay of capital. It must also be remembered that the dividends had been always paid upon both productive and unproductive capital. In the second year the profits went down to 21 per cent. of the revenue. In the third year it rose to 30 per cent (he was now speaking of the per centage of profit in reference to gross revenue); in the fourth year it increased to 35 per cent.; and in the fifth year to 41 per cent. It decreased a little the following year, arising from the cause already referred to—a large outlay of capital not immediately productive—and was then only 28 per cent. In the next year, which was 1865, it rose to 43 per cent.; in 1866 it was 48 per cent; and in the present year it was 50 per cent. He was anxious to explain these matters to show that, in regard to gas making, the longer they went on the larger the per centage of profit. Last year, as he had stated, it was 48 per cent. of the gross revenue, and this year, upon the excess of revenue over that of last year, the profit was 60 per cent.; and this exercised its influence over the whole of the other portion of the gross revenue—*i. e.*, it increased the profit of the whole fully 2 per cent. With regard to the concluding paragraph of the report, he had only to express a hope that the proprietors considered it satisfactory. They had already received an interim dividend of 3 per cent., and the profits enabled the board now to recommend a payment of 6 per cent., making a total dividend of 9 per cent. for the year. He was perfectly aware that there were gentlemen who, for some reason or other, fancied the company were not going on sufficiently fast, and that, but for bad management, or something of the sort, the directors might pay the shareholders a much larger dividend. At all events, he hoped the board would have the credit of going on safely. The progress of the company was much better than it looked upon the face of the accounts, unless the shareholders went a little more deeply into the matter than they could do by a mere perusal of that document. Last year the reserve-fund was instituted, and it was quite early enough to do it then. The company had no obligations—all their property was their own at the end of their contract; they had, therefore, no occasion for a redemption-fund, or anything of that sort, and the directors thought it desirable to give the shareholders a good dividend before they entered upon the question of a reserve-fund. But when that period arrived they had no hesitation in doing it in what he thought would be considered a masterly manner. They took £1000 at once from the profit and loss account to commence the reserve-fund with, and as during the past year they had made use of the money, they credited the account with 6 per cent. interest. On the present occasion they placed another £1000 to that account, making the reserve-fund £2060. He had no doubt they would be able to go on at that rate—perhaps a little faster; and if they, at the same time, were able to increase the dividends to the shareholders, he thought it would be considered as an arrangement consistent with good judgment and equity. There was no doubt that during the past year the company had earned a full 10 per cent., because, after adding £1000 to the reserve-fund and paying 9 per cent. dividend, they carried over to the next account more than £900. He had incidentally referred to the 14 acres of land in possession of the company at Howrah. They had also a large piece—about 12 acres—at Calcutta. This land was their own freehold; it was bounded by public roads, and, though it had cost a tolerably large sum, it was all paid for, and it was a most valuable acquisition. They would not want nearly the whole of it, but he thought they had done wisely by securing it, and probably hereafter they would be able to sell a portion at Howrah sufficient to recoup the whole outlay on this account there. Again congratulating the meeting on the prosperous condition of the company's affairs, he would now move the adoption of the report.

Mr. WHITE seconded the motion.

Mr. BADDELEY said he was sure the proprietors must be extremely gratified with the favourable report now presented to them. Having watched the progress of the company from its commencement, he thought the chairman had rather understated than overstated the truth in respect to it. Looking back over the last two or three years, their position exhibited a most marvellous contrast. The company's rental in 1866 was £24,954. This year there was an increase of no less than £4040. To accomplish that result he found, from the other side of the account, they had only expended £1010 additional for coals, and £123 in the item of wages. Such an enormous increase in the working of one year was unparalleled in the history of any gas company. It ought at once to convince the shareholders that they were embarked in a good undertaking, and it fully justified the remark made by the chairman, that the proportion of profit increased as the company continued in operation. He thought great credit was due to the board in London and to the committee in Calcutta for their successful management, and that the shareholders might safely congratulate themselves upon the result, more especially when they remembered what had been the state of things in India.

Mr. STOKES also congratulated the proprietors on the present state of things, and said he differed from the chairman in only one respect, and that was in reference to the reserve-fund. He hoped that for many years the board would continue to add to that account. While the company was prosperous such an addition would never be felt, and if, on the other hand, any misfortune should arise, this fund would be found most inestimable. He was extremely pleased to find that the directors had concluded the contract for Howrah, and would like to be informed how the necessary capital for the works there was to be provided.

A PROPRIETOR remarked that the directors were carrying over £1300, which was a large sum, to the next account, and he thought they might very safely give the shareholders another half per cent. dividend.

Mr. SLOUS, referring to the capital for the Howrah extension, called attention to the item in the balance-sheet, "Loans on debentures, £18,450." He said he had two objections to raising money in this way. The first was a general objection, arising from a fear lest they might be called to pay off those loans at an inconvenient time; although he admitted that, in this instance, when the money was so raised, it might have been difficult to raise money among the shareholders by a call. But, with regard to the future, he being a large holder of new shares, thought whatever capital was required should be raised amongst themselves. From his knowledge of the Stock Exchange, he might state that the great want there was only confidence, and, with reference to this company, that had already set in. As the new shareholders took their shares as men took their wives, "for better or for worse," he thought they ought now to have the advantage of the improved state of affairs when any new capital was wanted. If this undertaking had been a calamity instead of a success, every farthing would have been called up on the new shares, and therefore, if money should be required for the Howrah extension, he hoped the board would take into consideration the propriety, and, indeed, the justice, of making a call upon these shares, instead of raising money on debentures at a lower rate of interest. He recommended it also as a matter of expediency, to prevent the dividends of the company appearing too large.

Mr. CROWNE thought the proprietors need not be apprehensive of the dividends being too large, and only feared that the chairman had been too open-mouthed in referring to the prosperity of the undertaking. Although it was very desirable that the shareholders should be in possession of the true state of their affairs, yet, considering that this was a trading concern, he doubted the expediency of publishing the details of their operations so minutely as was done in the accounts.

Dr. BEATTIE differed altogether from this opinion, and thought that, looking at the number of years the company had been in existence before they realized a 9 per cent. dividend, there was nothing in their present position or prospects which would tempt any one in India to contemplate an opposition. He wished to know whether the local committee in Calcutta held any shares in the company, believing that it was always better that those who managed a concern of this kind should have a pecuniary interest in its success. The chairman had alluded to the quantity of freehold land belonging to them, which he thought was very satisfactory, remembering that gas companies in London were constantly vilified on account of the proximity of their works to inhabited districts, although, as matter of fact, houses had sprung up around those works which in most instances were built originally on open spaces. He hoped the directors would carefully consider

the point before they resolved upon selling any portion of their land. The quantity of coal consumed was perfectly satisfactory, as also the price. He was pleased to hear the statement respecting the gas-fitting department, and thought the item of "General expenses" in the profit and loss account exhibited proof of the attention paid to their affairs by the directors. As a holder of new as well as old shares, he approved of the directors policy of raising money on debentures at 6 per cent.

The CHAIRMAN said Mr. Stokes had quite misunderstood his observations with reference to the reserve-fund. The only question with the directors was as to when the creation of the reserve-fund should begin, and not whether they should continue it. They thought the shareholders ought to be receiving a good dividend before anything was laid by for reserve; but having once commenced such a fund, they had not the remotest intention of departing from the principle to add something to it every year. With regard to the capital for Howrah, in connexion with the question of debentures, he might remind the meeting that the directors took power to issue £50,000, which, considering that the company had an uncalled capital of £120,000, was not an unfair proportion. Up to the present time, they had issued about £25,000 worth of those debentures, and the opinion of the board was that they should now issue the remaining £25,000, unless the shareholders expressed a very decided wish against it. They did not, however, think it would be well to go beyond that. Remembering that some time ago the directors were threatened with all sorts of pains and penalties when they had a notion of calling up money on the new shares, it seemed rather curious they should now be urged to make such a call, and he would only say that it would interfere with the arrangements of the board to accede to the proposition. He had already stated that the land at Howrah was paid for; and as the money for the construction of the works would only be required gradually, he thought it would be well for the shareholders to leave the question of debentures and calls in the hands of the directors, believing that they would have no reason to find fault, as he could promise that the board would not go beyond £50,000. With respect to the observations made upon the accounts, he thought there was very much force in the remark about disclosing too freely the state of the company's affairs. But the regulations of the company required details to be given to the shareholders seven days before the meeting, and the board were always anxious to furnish all the information in their power. He agreed with Dr. Beattie that 9 per cent. was not too large a dividend upon capital invested in Calcutta, considering that for some years they were without dividend at all. Even in London, where gas companies were always being knocked about from post to pillar, they were allowed to pay 10 per cent., and to make up deficiencies of back dividends for six years. This company, therefore, need have no fear of exciting opposition in Calcutta—competition was out of the question—until they paid at least 15 per cent., and made up their back dividends to that amount. At the same time, as even with the most satisfactorily conducted concern there were sure to be some uneasy spirits, it would be personally more gratifying to himself if the accounts were not so minute in their details. He did not think it was the right principle for a manufacturing company to lay before their customers the mode in which they made their profits, and the directors had it in contemplation to issue a condensed form of accounts in future. With respect to the Calcutta committee, they were not shareholders, and, in truth, if the directors had waited till they could have obtained shareholders to undertake the office they would have been without a local committee to the present time. The company had been very fortunate in securing the services of gentlemen so eminently qualified for their position, and he trusted they would be equally successful in filling up the vacancies which might occur in the committee. At the time the committee was constituted the directors had no means of offering them shares, and, in fact, they did not at all consider the holding of shares a necessary qualification. It would be an ungracious thing now to adopt Dr. Beattie's suggestion, and they would very likely run the risk of the committee declining to act. An inquiry had been made with respect to the works done by contract. The only work which the directors found it desirable to get done in that way was the brickwork. The other portions, such as main-laying, &c., they tried in the early stage of the company's existence, and found that it was not satisfactory. The erection of works and the setting of retorts were, therefore, done by the company, who had a very able engineer to direct such operations. It would never do, seeing that there was plenty of native labour and European skill in the country, to let out work which the directors believed they could do better and more economically themselves. In one of the letters sent over from Calcutta it was stated that "during the past year the works and buildings have been maintained in a good state of repair. The experience of two rainy seasons has shown the firm and sound nature of the new buildings, and though built on foundations resting on soil little better than quicksand, they evince no sign of crack or flaw."

Mr. ROBARTS asked whether the repairs were not of an unusual character during the last year. It appeared to him to have largely exceeded the amount set apart for them. With regard to debentures, he was of opinion that it was much better to make a call, and so keep the benefit of their improving concern in their own hands.

The CHAIRMAN said the repairs were not at all extraordinary. With regard to wear and tear, it would be seen from the accounts that there was a balance to fall back upon, in addition to the amount appropriated from the current year's revenue. Hitherto the amount so set apart had been found sufficient; if hereafter it should turn out to be deficient the per centage must be increased.

A PROPRIETOR expressed his approval of the suggestion that the local committee should be shareholders, and his disapproval of the proposal to make the accounts more general.

Mr. BEECH hoped that, in the event of the retirement of any of the directors, the vacancy would not be filled up until the shareholders had been consulted.

The SOLICITOR pointed out that by the Companies Act any vacancy so filled was only a temporary appointment until the next meeting of shareholders.

Mr. PEILL considered it would be unwise for the directors to pledge themselves not to fill up vacancies, for it would seriously interfere with the management of affairs if their number were from circumstances reduced so that they could not form a quorum.

The CHAIRMAN said that personally he saw no objection to leave the vacancy unfilled, but it would not be well to take the power out of the hands of the board.

The motion for the adoption of the report was then put and carried.

On the motion of Mr. ALLAN, seconded by Mr. SLOUS, the retiring directors, Messrs. Cubitt and Fawcett, were re-elected; and on the motion of Mr. HADLAND, seconded by Mr. HAMMACK, the retiring auditors, Messrs. Backler and Peill, were re-appointed.

The CHAIRMAN then moved—"That a dividend of 6 per cent., free of income-tax, be paid to the shareholders on the 3rd day of December next, making, with the interim dividend in June last, a total dividend of 9 per cent. for the year."

Mr. STOPFORD seconded the motion, which was put and carried.

Dr. BEATTIE said at the next meeting he would move a resolution that the local committee in Calcutta should hold not less than 25 shares in the company.

Mr. SLOUS hoped no motion would be made on the subject. His experience had taught him to disbelieve in qualifications of the sort, and to rely more upon the possession of business habits and integrity in those who managed affairs.

On the motion of the CHAIRMAN it was resolved—"That the thanks of the shareholders be given to the Calcutta committee, and to Mr. Mellor, for their zealous and careful attention to the affairs of the company."

The meeting was then made special for the purpose of considering an alteration in the Articles of Association.

The CHAIRMAN said it might be known to some of the proprietors that during the last session of Parliament an amendment of the Companies Act of 1862 was made, by which paid-up shares in undertakings of this kind might be converted into shares payable to bearer. It was simply a permissive power which the shareholders could avail themselves of if they desired it. In this company it would be very serviceable, as at present shares held by persons in India were obliged to be sent to England for the transfer to be registered whenever they changed hands. He therefore moved—"That the existing rules and regulations of the company be altered to the extent and in manner following:—With respect to any shares in the company which shall be fully paid up, or any stock into which such shares may have been converted, the company may issue share warrants to bearer, as defined and described in the Companies Act, 1867, and may provide by coupons or otherwise for payment of the future dividends on the shares or stock included therein. The bearer of a share warrant may, on depositing his warrant with the secretary of the company not later than forty-eight hours before the time of holding any meeting of the company, be present and vote at any such meeting in respect of the shares or stock included in such warrant."

Mr. ALLAN seconded the motion.

Mr. BADDELEY questioned the propriety of the alteration. This company at the first issued scrip certificates, and nothing but the vigilance at the office prevented a very heavy loss by forgery. The directors then felt that the only security to the shareholders was in having the shares constantly passing through the office, by which any irregularities would be discovered.

Dr. BEATTIE also considered the alteration would be inconvenient and dangerous.

Mr. PEILL supported the proposition, which to shareholders in India would be regarded as an advantage, relieving them of the delay, risk, and expense of sending transfers to England for registration. It would also enable married ladies and minors to hold shares, which they could not now do.

Mr. HILL expressed surprise that a provision which had been asked of the Legislature as a great boon to companies in facilitating their business, should now be objected to on such shallow grounds. There was no more danger of forgery in the shares of this company than in those of French and Belgian companies, all of which were to bearer.

After some further conversation on the subject,

The CHAIRMAN reminded the meeting again that the power to convert the shares into warrants was only a permissive power, and that all those who chose to retain their shares in the present form could do so.

The motion was then put, and carried.

Mr. STOKES moved, and Mr. HAMMACK seconded, a vote of thanks to the chairman and directors, which was cordially adopted.

The CHAIRMAN acknowledged the vote, and assured the proprietors that the best attention of the board would continue to be directed to the furtherance of the interests of the company.

Mr. HAMMACK proposed a vote of thanks to the secretary and the engineer of the company.

The CHAIRMAN seconded the motion, and in doing so said these gentlemen were well deserving of the compliment thus paid to them, for he believed that two more meritorious officers could not be found in connexion with any company. Mr. Hersee, was engaged from morning till night at the office, and his undivided attention was given to their affairs, and the company reaped great advantage from his services.

The motion was put, and carried unanimously.

The SECRETARY said he was greatly obliged to the proprietors for this expression of their approval. It was a great encouragement and stimulus to further exertions on their part.

On the motion of Mr. HADLAND, seconded by Mr. STOKES, thanks were voted to the auditors.

Mr. PEILL acknowledge the vote, and said the labours of the auditors were materially lessened by the admirable manner in which the accounts were kept by the secretary.

The proceedings then terminated.

METROPOLITAN BOARD OF WORKS.

FRIDAY, NOV. 29.

MR. DOULTON AND THE CONTRACTORS.

The usual Meeting of the Metropolitan Board of Works was held this day, at the Office, Spring Gardens—Sir JOHN THWAITES in the chair.

On the usual formal motion being made that the minutes of the board of Friday, the 22nd inst., be signed,

Mr. ROCHE moved that the minutes be not signed, as they were not a correct record of what then took place. In doing so, he said: I find that there is a full record of the speech of the honourable member for Lambeth, and of the letters, or parts of letters, which he then read, but with respect to no one else does his speech or remarks appear on the minutes. If it was right that the remarks of Mr. Doulton should be recorded, in which he chose to attack myself without the least notice, or the slightest intimation that he was about to do so, and which I had a right to expect—if Mr. Doulton's charges against me were recorded, my denial of those charges ought also to appear on the minutes with them. Therefore it is that I shall move that the minutes be not signed. These minutes I will now read to show that they are not a fair record of what took place. They are as follows:—

The chairman explained to the board that the letter to which Mr. Furness alluded (one having been previously read) was, no doubt, that written by Mr. Bazalgette, in accordance with the wishes of the board, disclaiming any participation in the Odessa contract, a copy of which, together with Mr. Furness's reply thereto, was laid before the board on the 4th of December, 1863.

Mr. Doulton, M.P., then proceeded to make some observations upon the evidence given by Mr. Furness, so far as related to himself, and the inference to be drawn therefrom—namely, that he had received a part of the money which Mr. Furness paid for suretyship for the Thames Embankment contract, the truth of which inference he (Mr. Doulton) denied, and he read the following extract from a letter which he stated he had received from a gentleman thoroughly conversant with the subject:—"You did not receive anything in the shape of cash or bills for your own use or profit in reference to this matter." This letter, Mr. Doulton said, being

marked "private," he could not read it in its entirety in public, but the writer had given him permission to place it in the hands of the chairman of the board, or before any committee which might be appointed to investigate the matter. Mr. Doulton further stated that having within the last few days received a communication containing a fresh charge against himself, in relation to the transactions of the board, he wrote to Mr. Furness, and received a reply as follows:—[The correspondence which appeared in the last number of the JOURNAL is then set out at length.]

Now, having read the minutes, I can say that they are not a fair record of the proceedings, as I distinctly denied what Mr. Doulton had stated. The observations of Mr. Doulton and all the letters he read are here recorded, but none of my observations, or the speeches of any other honourable member, are to be found on the minutes. I contend that speeches of members ought not to appear on the minutes at all; but if the charges are inserted the denial of them ought to appear also. I shall, therefore, move—"That the minutes be not signed, the same not being a correct record of the proceedings of the board. That the speeches of members do not form any part of the recorded proceedings of the board, and ought not to appear on the minutes, nor any documents read by them as part of their speeches. That if the speech of Mr. Doulton, together with the letters read by that gentleman, containing charges against myself are to be recorded on the minutes, my statement, that the charge that I promised to support Mr. Furness for the contract if he would enter into an agreement to have all the granite from the Lundy Granite Company was wholly untrue, should also be recorded."

The CHAIRMAN: Let us take care that our proceedings are quite regular. The honourable member (Mr. Roche) objects to members speeches appearing on the minutes, and it is quite clear that Mr. Doulton's speech does not appear on the minutes, but the very slightest abstract of it. When the letter was read denying the allegations made against Mr. Doulton, it was but just to the honourable member that such denial should follow his statement, and in entering it the clerk had but followed the usual course.

Mr. HEALEY seconded the motion.

Mr. SHAW said that Mr. Doulton had stated that the board had not been furnished with the whole of the evidence given by Mr. Furness on the occasion of his examination before the Registrar in Bankruptcy, as it referred to the conduct of Mr. Roche. Now, the shorthand writer who took the notes had been written to by the solicitor of the board, and in reply he said that he had stated on oath that all the minutes of evidence which had been transcribed and furnished to this board were the whole of what he had taken on that occasion, and that no reference whatever was made during that inquiry to Mr. Roche.

The CHAIRMAN: That part of our inquiry has not at present been gone into.

Mr. FREEMAN suggested that the signing of the minutes should be deferred for a week until they were made more correct.

This suggestion was agreed to, and Mr. ROCHE withdrew his motion.

At a later period of the day Mr. POLLARD, the clerk of the board, wished to know from the members in what way he was to alter the minutes which were said to be incorrect. He had prepared them to the best of his ability, and he should like to be informed what should be added and what parts of the minutes should be struck out. Mr. Roche had furnished him with an abstract of what he had said in denial of the statements made with reference to him, and he would be glad to understand if it would meet the views of the board that he should enter this denial on the minutes.

Mr. RICHARDSON said it was not their duty to enter on the minutes speeches or letters read by individual members. They should only contain the results of what the board actually did.

Mr. SAUNDERS seconded the motion, urging very effectively that if any abstract of a speech or copies of letters were given which one member had made or read, and the speeches made and letters read by every other member should also be inserted, this would be most irregular and inconvenient, and would be going beyond the intention of the board in keeping minutes of what they did.

After some further discussion, it was agreed that Mr. Doulton's letter and that of Mr. Furness, in reply, should be struck out of the minutes.

THE WATER SUPPLY OF CANTERBURY.

At a Meeting of the Canterbury Town Council, held on Wednesday last, the long vexed question of a water supply for that city, which it was opined had been settled by the gas company deciding to carry it out, but to accomplish which no steps have been taken owing to the requisite capital not having been subscribed, was re-opened.

The MAYOR (H. G. Austin, Esq.) said the rapid progress that was being made with the new drainage works rendered the question of water supply of great importance. It would be in the remembrance of members of the council that Mr. Pilbrow, their engineer, had told them an abundant supply of water was essential to the success of his sewerage works, and yet they remained quite in the dark, and with little prospect, to his mind, of having the requirement met. There was no doubt that having properly constructed water-works would be a profitable undertaking; and this induced him to make the inquiry whether it would not be better for the council to take the construction of these into their own hands, and supply the profits to the reduction of their local rates. Feeling, as he did, strongly that this should be done, he would move the appointment of a committee to consider the question, and report to the whole court.

Alderman MASTERS, in seconding the resolution, remarked that the council would have determined to take the construction of water-works into their own hands if a section of its members had not raised an outcry against so large an expenditure. He questioned now whether they had not let the chance they then possessed slip, because the gas company had moved in the matter, although the managers of that concern had certainly not kept a promise made that the water-works should be carried on at the same time as the new drainage scheme. He was decidedly in favour of the local board having the water supply in their own hands, and he hoped if they did so that they would adopt less expensive plans than were proposed to be carried out by the gas company.

Mr. HART said he had always been in favour of the local board having the water supply in their own hands. He had statistics from Gloucester, a town comprising 25,000 inhabitants, where water-works had been erected at a large cost—£41,500—but a 1s. rate paid the whole expenses of management, and the instalments of borrowed capital and interest as well. At Dover, a 4d. rate paid the whole cost of the water, and all the rest was profit. These statistics showed what a mistake they had made in allowing the opportunity to slip of taking the water supply into their own hands. Now he was afraid it was gone, as the water company had entered into the scheme, and had incurred great expenses, which would have to be arranged for before any transfer of their powers could be made to the council. Still, could any arrangement even now be come to it would have his hearty support.

The MAYOR here mentioned that a letter was in his hands, recently written by Mr. Pilbrow, and as it threw additional light on the question under discussion, he would read it to them. Mr. Pilbrow says: "I should be prepared to show, if the whole matter were referred again to me, that if the Commissioners of Sewers and the Dean and Chapter would aid, and by the drainage account being debited with a proportionate sum, that the city and the whole valley above, as far as Mr. Lake's, could be drained to a most important degree—both mills abolished—the water-works completed, and efficiently set to work, for an amount so small that the consumers of water under the local board would not only pay the interest of the money borrowed on this account, but, if they paid the same rate as the water company will charge them, that they will pay double the amount of the rate for the drainage (besides the interest of money), and the principal too, in thirty years; so that, after that period, they would have neither water nor sewer rate, but might, if a rate were still charged for water, abolish all other rates (except, perhaps, the poor-rate). That is to say, the usual water-rate being charged, it would pay not only its own expenses, interest of money borrowed, and the amount itself off in thirty years, but would do the same on the drainage, leaving a balance in hand, besides, to go towards other rates, or to permit of the water-rate being lessened."

Alderman BRENT deprecated the course pursued by the gas company in the water supply question, in first asking the council £7000 for their old works, and then coming down to £5000. By acting thus the council felt that they had not been fairly treated, and declined to entertain the matter further.

The TOWN-CLERK mentioned that the offer of £5000 came to the court from Mr. Pilbrow, and not from the gas company.

Mr. MARTEN (a gas director): Mr. Pilbrow was not authorized by the directors to make the offer.

Alderman BRENT continued by observing that he believed, if the council took the water supply into their own hands, there would be a lavish expenditure, and not be so well worked as if conducted by a private company. Having entered upon their scheme, it would be unwise for the council to take it out of the gas company's hands unless they failed in meeting the requirements needed.

Alderman COLLARD (a gas director) said the only price asked by the company was that at which the works were valued in their Act—viz., £7000. Mr. Pilbrow came forward and said that he had got a water scheme so very much better than Mr. Homersham's, that he asked for and obtained a hearing from the directors, who were disposed to entertain it. That scheme was submitted to Mr. Hawksley, but his opinion was scarcely favourable to it. Still Mr. Pilbrow maintained that he could supply water at a much cheaper rate than Mr. Homersham, and he proposed another scheme, which had the approval of a celebrated engineer, Mr. Bateman, and which probably would have been adopted but for the awkward fact that, according to their Act, the directors could only take their water from one source. Mr. Pilbrow in that scheme did make some offer of selling the rights of the water company for £5000.

The MAYOR objected to placing too much confidence in the course to be taken by the gas company, considering that the council should look out for themselves.

A committee of the whole house was then formed to consider the question, and the council adjourned to the Guildhall, where they formed themselves into a General Purposes Committee to consider complaints made by Mr. W. J. Cooper against the mode in which the contractor for the drainage pipes (Mr. Doulton) was executing the undertaking.

The proceedings, which were protracted, and at times somewhat noisy and irregular, may be thus summarized:—Mr. Cooper made two allegations against Mr. Doulton: first, that all the pipes were not of his manufacture; and secondly, that they did not come up to the standard of thickness and proportion specified in the terms of the agreement entered into; and that, consequently, the contract had been broken by Mr. Doulton. In support of the first assertion Mr. Cooper stated that the 24-inch pipes supplied were not all made by Mr. Doulton, but part of them by Mr. Cliff, of whose make the engineer had said that they were not fit for the use to which they were to be applied, and that it would be useless for Mr. Cliff to contract.

The answer of Mr. PILBROW to this was that he might have said he would not use Mr. Cliff's pipes in the city for the main sewer. The condition of the contract entered into between the board and Mr. Doulton was that pipes were to be supplied which he (the engineer) deemed fit for the purpose to which they were to be applied, and consequently, if they were of this description, he did his duty by allowing them to be used, having no business to ask by whom they were manufactured. Indeed, the board were powerless to interfere in the matter. Pipes had been supplied by Mr. Doulton which had been condemned, and some delay had arisen, and a statement was made by Mr. Doulton that he could not supply them faster, as he (the engineer) was so particular as to the finish.

In advocacy of the second point of complaint, Mr. COOPER said that the 12-inch pipes were to be one inch and a tenth in thickness, whereas some he had measured were hardly the thickness of one inch.

The reply to this was produced by one of the pipes being brought into the room. According to Mr. Cooper's method of testing its thickness—that of applying a measure at each end—it did not come up to the required standard; but when tested by a scientific instrument at points beyond the "cone" or shoulder at one end, and beyond the depth at the other end fitting into the cone, it was found to be one inch and an eighth, or two fractions thicker than the specification.

Mr. COOPER further contended that the "cone" of the pipes was not in accordance with the scale laid down in the engineer's drawing, which was the basis of the specification; and whilst admitting that the drawing might possibly represent a greater depth, Mr. Pilbrow asserted that this also was a matter which must be left to him to determine without the interference of the board. His professional reputation was at stake, and he had done all in his power to sustain it in carrying out their works.

Ultimately a resolution was passed to the effect that, so far as the works had proceeded, the contract for pipes had been properly carried out by Mr. Doulton, and that the board was satisfied with the services rendered by the engineer.

The proceedings then terminated.

THE DRAINAGE OF MAIDSTONE.

A Meeting of the Maidstone Local Board of Health was held on the 27th ult., when the drainage question was opened by the TOWN-CLERK reading the following letter from the Local Government Act Office, London, in reply to an application for sanction to borrow a sum of £9000 for new drainage works:—

Whitehall, S.W., Oct. 31, 1867.

Sir,—I am directed by Mr. Secretary Gathorne Hardy to transmit to you, for the information of the Maidstone Local Board, the accompanying copy of the inspector's report on his recent inquiry at Maidstone, respecting the proposed loan, and I am to inform you that he must decline to give his sanction to such loan for the reasons set forth and explained in the inspector's report made to him on the 28th ult.—I am, sir, your obedient servant, T. TAYLOR, Secretary.

E. Hoar, Esq., solicitor, Maidstone.

(COPY.)

LOCAL GOVERNMENT ACT, 1858.—MAIDSTONE.

Report upon an application from the Town Council of the borough of Maidstone, in the county of Kent, acting as the Local Board for the district of the said borough, for sanction to borrow upon mortgage of the general district rate, for sewerage works within their district, the sum of £9000.

Local Government Act Office, Whitehall, Oct. 28, 1867.

To the Right Hon. Gathorne Hardy, M.P., Her Majesty's Principal Secretary of State for the Home Department.

Sir,—I have the honour to state that, in pursuance of an application from the local board for the district of the borough of Maidstone for sanction to borrow the sum of £9000 for sewerage works within the district, I visited Maidstone on Friday last, the 25th inst. I found that the plans for the drainage of certain portions of the district had been brought before the local board at their meeting held on the 15th of July last, when fifteen members out of twenty-four were present. It was resolved, by a majority of ten, to carry out these works, and to apply for sanction to borrow a sum sufficient for that purpose.

Plans for outfall works, estimated to cost £14,000, were also discussed; but it was considered advisable to postpone this question until further information could be obtained as to the most approved mode of dealing with the sewage of the district, so as to prevent the pollution of the river Medway below the town.

The river Medway flows through Maidstone, and for that portion of its course is under the control of a navigation company; there are locks at Allington, about two miles below the town, and these cause the water in the river to be dammed back, and to remain stagnant from that point to a short distance above the town.

During spring tides these locks are opened, and a portion of the water drawn off. The river is also partially cleared by floods, but at all other times it acts as an open cesspool for the drainage of the entire district.

A considerable amount of most objectionable matter is sent down into this reach from paper-mills situated upon the river above the town. I find that, upon examination of the plans submitted, there are seven outfall sewers discharging their contents into the stagnant portion of the river.

The sewers, to construct which the present application is made, are projected to connect with these seven outfalls, and to carry off the drainage of upwards of 2000 houses; therefore the existing evil of the pollution of the river will be increased by at least 100,000 gallons of sewage matter being discharged into it daily.

The town of Maidstone is healthily situated, yet the rate of mortality is far above the average, being over 22 per 1000. The inference naturally is that this excess is at least in some degree due to disease engendered by the drainage of from between 4000 and 5000 houses flowing into the river and remaining there. There seems to be such a difference of opinion among the local board as to the necessity of taking the sewage of the district away from the town, that it is to be feared, should this sanction be granted, nothing further would be done towards cleansing the river above and below the town, and the scheme for the construction of an intercepting sewer to the Medway, below Allington locks, where the river becomes tidal, would never be carried out.

The question of allowing the pollution of the river to exist, and of increasing it by works now proposed to be executed, is one which ought to have the local board's most serious and immediate attention. Involving, as it does, the health of 25,000 inhabitants, I am of opinion that the scheme for intercepting the sewer and taking it below Allington should be proceeded with either before or in conjunction with the works for which the present application it made.

Those of the local board who were present on Friday last stated that they were not in a position to undertake that outfall works to below Allington locks should be constructed either at present or at a future time.

I cannot approve of the sewerage works that will increase the amount of river pollution, instead of removing it altogether.

Therefore I recommend that this sanction be not granted, and that the matter be referred back to the local board for their reconsideration.—I have, &c.,

(Signed) ROBERT MORGAN.

The MAYOR remarked that Mr. Morgan was of opinion that the works ought to be gone on with, but he thought the sewage of the town should be kept out of the river Medway.

Mr. ELLIS proposed that the further consideration of the subject be postponed to that day three months. The reason for refusing the application lately made seemed to be that they would add to the nuisance that already existed in the town. It was a notorious fact—one beyond dispute, and one which was contained in a report to the Privy Council by Dr. Buchanan—that not only had the death-rate decreased materially, but the death-rate from certain diseases—all specified in the report, such as consumption—had decreased in many of those places where structural drainage works had been in operation. It was also a fact that in some of these towns the decrease in the death-rate had been as much as 75 per cent., and in many something like 47 per cent. Some of these facts were the basis of the reasons he urged for the adoption of a drainage scheme; and why should Maidstone lag behind? It was stated in the report just read that the death-rate in Maidstone was excessive, and why should they not try to reduce it? Surely not because they would involve themselves in some little additional expense. He was not arguing that they should proceed with the present scheme, but that the scheme should stand over for three months for further consideration, when they would approach the matter with a determination, if possible, to do something to abate the evil. With regard to the carrying out of sewerage works down to Allington, he had gathered from Mr. Morgan, when he was in Maidstone, that the scheme was one which would work, of which he approved, and which would not be liable to an injunction from parties below. And with regard to the River Commissioners, what was applicable to such rivers as the Thames and the Lea would not refer to the Medway. There was a strong reason why the water of the Thames and the Lea should be kept free from obnoxious matter—the water was used by three or four millions of people. Now, the water below Allington lock was brackish, therefore quite unfit for domestic purposes, and did not supply any town upon its banks with water.

Mr. VALE seconded the proposition of Mr. Ellis. He said experience had proved, in reference to the expenditure of a large sum of money in carrying out drainage works, that they should be extremely cautious how they went about it. The drainage of Maidstone, however, was absolutely necessary; but that was no reason why they should rush into the matter without regard to the prosperity or success of the scheme before them.

Mr. LEVEY said his opinion was that the draining into the river was not of that noxious character to the health of the inhabitants of the town that many people imagined, and that the idea that the water of the river was sufficiently great to render it innocuous for many years to come was a correct one. He (Mr. Levey) regarded the "excessive death-rate" of Maidstone as a myth. Statistics were queer things to deal with if they were not handled very carefully indeed. If the statistics were carefully handled, he believed they would show that the health of Maidstone was as good as most towns similarly situated in the country. The death-rate was not excessive for a town population, and, indeed, he believed it was below the average rather than otherwise. But that was no reason why it should not be made better if possible. The diminution of consumption from drainage was, to his mind, nothing; for it was, he believed, not from the drainage, but the drying of the land, that the diminution might take place. Mr. Levey then drew attention to his opinion that increased cleanliness on the part of cottagers was the most effective plan to decrease the death-rate, and concluded by saying that he did not rise to oppose the adjournment, only he hoped it would not, at the end of the three months, be considered that some plan was to be proposed, and that they were to go immediately into action.

Mr. WICKHAM said he was prepared to support the adjournment, but they must not consider themselves pledged to any scheme. The proposition was a very fair one, and he had no doubt the information the committee would gather would be very valuable.

Mr. ELLIS said he was exceedingly sorry he could not persuade Mr. Levey that there was any truth in figures. He could only refer him to a very interesting book by Dr. Buchanan, where 25 towns—not selected ones—were quoted as having a considerable diminution in the average death-rate, and in these towns sewage works had been in operation for some time. In 19 out of these 25 towns a marked improvement was shown in the public health. Four of the other six had remained stationary, and two had increased.

Mr. CLIFFORD and Mr. BROWN supported the proposition, and it was put and carried unanimously.

COMPOSITION AND QUALITY OF THE METROPOLITAN WATERS, IN NOVEMBER, 1867.—The following are the returns of the Metropolitan Association of Medical Officers of Health:—

NAMES OF WATER COMPANIES.	Total Solid Matter per Gallon.	Loss by Ignition.*	Oxidizable Organic Matter.†	Hardness.		Organic and other Ammonia.
				Before Boiling.	After Boiling.	
Thames Water Comps.	Grs.	Grs.	Grs.	Degs.	Degs.	Grs.
Grand Junction	19·83	0·86	0·38	13·5	4·0	0·004
West Middlesex	19 17	0·95	0·21	13·0	4·0	0·004
Southwark and Vauxhall	20·50	0·75	0·32	14·0	4·5	0·004
Lambeth	19·33	0·90	0·73	13·0	4·0	0·004
Other Companies.						
Kent	27·83	0·25	0·15	17·5	7·5	0·004
New River	18·93	0·75	0·20	13·5	3·0	0·004
East London	20·09	1·00	0·29	13·0	4·0	0·004
Surface Wells.						
Basinghall Street	80·33	3·75	2·04	38·0	—	0·140
Guildhall	37·00	2 00	1·02	19·0	—	0·060

HY. LETHEBY, M.B.

* The loss by ignition represents a variety of volatile matters, as well as organic matter, as ammoniacal salts, moisture, and the volatile constituents of nitrates and nitrites.

† The oxidizable organic matter is determined by a standard solution of permanganate of potash—the available oxygen of which is to the organic matter as 1 is to 8; and the results are controlled by the examination of the colour of the water when seen through a glass tube 2 feet in length and 2 inches in diameter.

DR. FRANKLAND'S ANALYSIS OF THE METROPOLITAN WATERS IN NOVEMBER, 1867.—"Royal College of Chemistry, Nov. 30, 1867.—Sir,—I have the honour to submit to you in the following table the results of the chemical examination of the waters supplied to the metropolis during the month of November. For the purpose of comparison I append also the results yielded by Loch Katrine water, as supplied to Glasgow, and by the water supplied to the towns of Lancaster and Manchester, when submitted to the same analytical processes:—

Companies.	Date and Place of Collection.	Total Solid Impurity in 100,000 Parts.	Organic Carbon.	Nitrogen, as Nitrates and Nitrites.	Ammonia.	Total combined Nitrogen.	Previous Sewage Contamination (Estimated).	Total Hardness.
Thames.								
Chelsea	Nov. 11—Cab Rank, Horse Guards	29·6	·263	·222	·003	·242	1920	20·5
West Middlesex	Nov. 11—Cab Rank, Portland Road	28·4	·286	·225	·002	·245	1950	20·6
Southwark & Vauxhall	Nov. 11—Barclay's Brewery	29·8	·259	·183	·001	·203	1520	21·7
Grand Junction	Nov. 11—Cab Rank, Woodstock Street	29·8	·277	·210	·001	·229	1790	22·8
Lambeth	Nov. 11—Cab Rank, Lambeth Road	31·0	·268	·229	·001	·249	1980	22·8
Other Sources								
N.Riv.(unfil.)	Nov. 19— Haverstock Hill	25·2	·104	·187	·001	·208	1560	18·5
Do. (filtered)		24·8	·075	·176	·001	·179	1450	18·6
East London	Nov. 20 — Slater's Lamp-black Wks. Old Ford Road	30·2	·118	·156	·001	·164	1250	21·8
Kent	Nov. 22 — Deptford Railway Station	42·0	·113	·364	·001	·369	3330	29·1
Loch Katrine	Feb.—Glasgow	3·28	·256	·031	·002	·041	0	0·3
Lancaster	Sept.—Lancaster	3·54	·157	·036	·001	·038	0	0·1
Manchester	Nov.—Manchester	6·8	·242	·001	·001	·028	0	2·7
Column 1	2	3	4	5	6	7	8	9

The numbers in columns 3, 4, 5, 6, 7, 8, and 9 all relate to 100,000 parts of the waters. The table is to be read thus: 100,000 lbs. of Chelsea water collected on Nov. 11 at the Horse Guards cab rank contained 29·6 lbs. of solid impurity; the organic matter, constituting a portion of this impurity, contained ·263 lb. of carbon. This solid impurity also contained ·222 lb. of nitrogen in the form of nitrates and nitrites, besides ·003 lb. of ammonia, whilst the total amount of *combined* nitrogen in every form was ·242 lb. The above quantity of water supplied by the Chelsea Company had been, after its descent to the earth as rain, contaminated with sewage or manure matter equivalent to 1920 lbs. of average filtered London sewage. By gradual oxidation, partly in the pores of the soil, partly in the Thames and its tributaries, and partly in the reservoirs, filters, and conduits of the company, this sewage contamination had been converted into comparatively innocuous inorganic compounds before its delivery to consumers. Finally, 100,000 lbs. of the Chelsea Company's water contained 20·5 lbs. of carbonate of lime, or an equivalent quantity of other soap-destroying ingredients. The waters delivered by the companies drawing their supply from the Thames exhibit a considerable increase of both mineral and organic impurity as compared with last month. The purifying effects of the vegetation in the bed of

the river are now ceasing on the approach of winter, and, as a consequence, the products derived from previous sewage and manure contamination are to a great extent retained in the waters. The Chelsea and Southwark Companies waters were very slightly turbid when drawn from the mains; the remaining waters were perfectly transparent. The animal charcoal, through which the New River Company's water was passed, has now been in constant use for six months; nevertheless, the amount of organic matter left in the water after passage through the charcoal has only just perceptibly increased. On the 1st of June 100,000 parts of the filtered water contained ·07 part of organic carbon, and no organic nitrogen; whilst on the 19th of November 100,000 parts of water passed through the same charcoal contained ·075 part of organic carbon, and ·002 part of organic nitrogen.—I have, &c., E. FRANKLAND.—The Registrar-General, &c."

THE PROGRESS OF THE DRAINAGE WORKS AT CANTERBURY.—The contractors for the new system of drainage in this city (Messrs. Dickinson and Oliver, London) are making vigorous efforts to complete the work by next spring. Operations commenced in the marshes alongside the Broad Oak Road, where filtering works have been erected. The building is 168 feet long, 60 feet wide, and 7 feet deep, and into it will be conveyed the whole of the drainage of the city. The liquid manure will escape by an outfall drain into the river below Fordwich, and the residue utilized with approved apparatus and form a source of revenue. The outfall sewer has been carried across the marshes into the Sturry Road, and thence along the dyke bordering on that highway, to the right of Sturry Great Mill, and to be continued for half a mile to the outfall point on the river beyond Fordwich. Working back to the city, a brick cemented sewer has been laid in St. Stephen's Road, and workmen are busily engaged in draining St. Peter's Lane, Beer Cart Lane, and Lamb Lane. The next district to be worked is St. Dunstan's, St. Thomas's Hill, and the thoroughfares right and left, and after these are done (at Christmas) St. Peter's, High Street, St. George's, and the continuation of the main thoroughfare will be broken up. By the above it will be seen that the contractors, since they commenced the undertaking, have shown every desire to push on the work, in order to spare the citizens more annoyance than possible.

DR. HILLIER'S REPORT ON THE GAS SUPPLIED BY THE IMPERIAL COMPANY TO THE VESTRY OF ST. PANCRAS DURING THE MONTH OF NOVEMBER, 1867:—

Date.	Number of Observations.	Average Light in Candles produced by 5 Ft. of Gas per Hour.	Light in Candles reduced to Consumption of 120 Grs. per Hour.	Traces of Ammonia.	Traces of Sulphuretted Hydrogen.
Nov. 4	Sulphur	in 100 cubic feet of	gas equal to 13·4	grains.	
5	10	13·0	13·7	Yes.	No.
6	10	13·0	14·3	,,	,,
11	10	12·4	14·2	,,	,,
13	10	15·8	14·9	,,	,,
13	Sulphur	in 100 cubic feet of	gas equal to 7 grs.		
15	10	14·0	15·4	,,	,,
19	10	14·0	14·7	,,	,,
20	10	14·0	14·0	,,	,,
22	10	14·0	14·0	,,	,,
26	10	14·7	14·0	,,	,,
27	10	14·0	15·4	,,	,,
28	Sulphur	in 100 cubic feet of	gas equal to 10	grains.	
29	10	14·0	14·0	Yes.	,,

The highest result obtained was 15·4 candles, and the lowest 13·7; the mean illuminating power was equal to 14·4 candles. On three occasions the gas was tested for sulphur, and never found to contain in the 100 cubic feet more than 13·4 grains. Ammonia is constantly present. Sulphuretted hydrogen not at all.

Share List of Metropolitan Gas Companies.

No. of Shares issued.	Amount per share.	Name of Company.	Amount paid up per Share.	Div. per Cent. per Annum	Price per Share.
	£		£ s d	£ s d	£ s d
8000	10	Anglo-Romano	10 0 0	9 0 0	11 to 12
5000	20	Bahia (Limited)	20 0 0	nil.	
1000	20	Do., preference	20 0 0	10 0 0	27 10 0
750	20	Do., do., redeem.	10 0 0	10 0 0	12 10 0
40000	5	Bombay (Limited)	5 0 0	5 0 0	4 to 4½
10000	5	Do., third issue	3 0 0	5 0 0	2 to 2¼
10000	20	British, Limited (Norwich, Hull-Sculcoates, Hanley, Tunstall & Sheiton (Potteries), Trowbridge, & Holywell.)	20 0 0	6 0 0	28 to 29
12000	50	*Chartered*	50 0 0	6 10 0	52 to 53
6000	50	Do.	40 0 0	6 10 0	39 to 40
10000	20	*City of London*, A shares	20 0 0	9 0 0	22 to 24
10000	10	Do., B shares	10 0 0	4 0 0	6½ to 7
9629	10	Do., new shares	10 0 0	9 0 0	11 to 12
25000	25	City of Moscow (L)	25 0 0		9 to 11
17490	25	*Commercial*	25 0 0	10 0 0	32 to 33
20000	20	Continental Union	20 0 0	4 0 0	13 to 14
10000	20	Do., preference	20 0 0	7 0 0	
5827	5	County & General (Limited)	5 0 0	nil.	
2000	5	Do., preference (Pater, Pembroke, Ely, Lea Bridge, Northfleet, Walton, & Ware.)	5 0 0	nil.	
5000	10	*Crystal Pal. Dist.*	10 0 0	10 0 0	13½ to 14
5000	10	Do., preference	10 0 0	6 0 0	12½ to 13
10000	10	Do., new shares	2 10 0	7 0 0	2½ to 3
4000	50	*Equitable*	50 0 0	10 0 0	64 to 65
4000	25	Do., new shares	25 0 0	10 0 0	32½ to 33
23406	10	European (Lim.)	10 0 0	10 0 0	12½ to 13⅛
12000	10	Do., new shares, Boulogne, Amiens, Rouen, Caen, Havre, & Nantes.)	5 0 0	10 0 0	7 to 7½
20000	10	*Gt. Cent. Gas Cons.*	10 0 0	10 0 0	12½ to 13
5000	10	Hong Kong (Lim.)	10 0 0	5 0 0	8 to 10
26000	50	*Imperial*	50 0 0	10 0 0	64 to 65
1300	100	Do., bonds	£100	10 0 0	170 to 175
2391	25	Imperial Austrian	25 0 0	nil.	
28000	50	*Impl. Continental* (Amsterdam, Berlin, Ghent, Hanover, Lille, Rotterdam, Aix-la-Chapelle, Antwp., Bordeaux, Brussels, Cologne, Frankfort-on-M., Haarlem, Stolberg, Toulouse, & Vienna	43 15 0	16 0 0	93½ to 94
400	100	Impl. Mexican (L.)	100 0 0	nil.	
200	100	Do., new	100 0 0	nil.	
3000	40	*Independent*	40 0 0	10 0 0	50 to 53
3000	10	Do.	10 0 0	5 0 0	7 to 9
3000	20	Do.	12 10 0	7 10 0	13 to 14
7133	50	*London*	50 0 0	10 0 0	62 to 63
5610	25	Do., 1st pref.	25 0 0	6 0 0	25 to 26
503	50	Do., 2nd pref.	50 0 0	6 0 0	
214	50	Do., 3rd pref.	50 0 0	6 0 0	
18781	*l*	Do., 1st pref. sk		6 0 0	
11828	*l*	Do., 2nd pref. sk		5 0 0	
12000	5	Malta & Medit. (L.)	5 0 0	4 0 0	3¼ to 4
6000	5	Do., preference	5 0 0	7 0 0	5 0 0
30000	5	Oriental, Calcutta	5 0 0	9 0 0	5¼ to 6½
30000	5	Do., new shares	1 0 0	9 0 0	1¼ to 1⅝
10000	5	Ottoman (Limited)	5 0 0	nil.	1⅞ to 2¼
10000	10	Parà (Limited)	10 0 0	6 0 0	8½ to 9
27000	20	*Phœnix*	20 0 0	10 0 0	25 to 26
3600	100	Do., new	35 0 0	7 10 0	35 to 36
144000	Sk.	Do.	100 0 0	5 0 0	70 to 72
5000	20	*Ratcliff*	20 0 0	10 0 0	22 to 24
	20	Rio de Janeiro (L.)	20 0 0	10 0 0	22 to 23
6959	5	Singapore (Lim.)	5 0 0	3 0 0	
2000	5	Do., preference Shanghai	5 0 0	7 10 0	
4800	50	*Sth. Metropolitan*	50 0 0	10 0 0	70 to 71
15000	10	*Surrey Consumers*	10 0 0	9 0 0	12½ to 13
10000	10	Do., new	6 0 0	9 0 0	6 to 6½
9000	4	United General	4 0 0		2 to 2¼
10000	10	*Victoria Docks*	5 0 0	6 0 0	
3000	10	*Wandsworth & Putney*	10 0 0	7 10 0	13½ to 14
20000	10	Western (L.) A sh.	10 0 0	10 0 0	13½ to 14¼
10000	10	Do., B shares	5 0 0	10 0 0	6½ to 7
10000	10	Do., C shares	5 0 0	10 0 0	6½ to 7
20000	10	Do., D shares	1 0 0	10 0 0	1¼ to 2
8000	5	*West Ham*	5 0 0	7 10 0	6 10 0
6000	5	Do., new shares	3 0 0	7 10 0	3 18 0
551	10	West London Junction (Lim.)	10 0 0	6 0 0	
520	10	Do., preference	10 0 0	6 0 0	

Price Current.

CASTINGS.—*Per Ton.*

Average Weight of Cast-iron Gas-pipes, per Yard.

1 in.	2 in.	2½ in.	3 in.	4 in.	5 in.	6 in.	7 in.	8 in.	9 in.	10 in.	12 in.
16	21	28	33	51	70	89	107	126	149	177	208 lb

Retail Prices are 5 to 10 per cent. higher.	London.	Glasgow.	Newcastle	Wales.	Yorkshire, Derbyshire, and Staffordshire.
	£ s. d.	£. s. d.	£. s. d.	£. s. d.	£. s. d.
Pig Iron, No. 1 (f.o.b.)	3 15 0	2 14 0	2 7 6	3 10 0	3 10 0
1¼ and 2-inch Socket-pipes	7 10 0	6 0 0	6 15 0	6 15 0	7 10 0
2½ and 3-inch ditto	7 0 0	6 0 0	6 5 0	6 10 0	7 0 0
4 and 5-inch ditto	6 10 0	5 10 0	5 15 0	6 0 0	6 10 0
6 inches and upwards ditto	6 5 0	5 0 0	5 10 0	5 15 0	6 5 0
Retorts, 1st fusion, hot blast	6 0 0	—	5 5 0	5 10 0	6 0 0
Ditto, 2nd ditto, cold ditto	7 0 0	5 15 0	5 15 0	6 0 0	7 0 0
Tank-plates, ¾ thick and above	6 10 0	5 10 0	5 10 0	5 15 0	6 5 0

WROUGHT-IRON TUBING,

Subject to 50 per cent. Discount.

	2 in.	1½ in.	1¼ in.	1 in.	¾ in.	½ in.
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Patent Welded Tubes, from 2 to 12 feet—per foot	1 8	1 0	0 10	0 7	0 5	0 4½
Ditto ditto, from 6 inches to 18 inches—each	3 0	2 0	1 9	1 3	1 0	0 9
Connecting-pieces, or Long Screws	3 6	2 3	2 0	1 6	1 2	0 11
Bends, Springs, and Elbows (wrought iron)	3 9	2 3	1 9	1 0	0 10	0 8
Tees, wrought or cast	4 0	2 6	2 0	1 6	1 1	0 10
Crosses, ditto	4 6	3 0	2 6	2 0	1 6	1 2
Iron Cocks	17 6	9 6	7 6	4 6	3 3	2 6
Ditto, with brass plug	28 0	16 0	13 0	7 0	5 6	4 6
Diminishing Sockets, Caps, Plugs, and Nipples	1 3	0 9	0 8	0 6	0 5	0 4
Plain Sockets	1 0	0 8	0 7	0 5	0 4	0 3
Syphons, 3-quart	15 0	14 0	13 6	13 0	12 0	—

GAS COALS.—*Per Ton.*

Newcastle.—Unscreened:—

East Castle, Haswells, Nettlesworth Primrose, and South Pelaw	7s. 6d.
Felling, North Pelton, Redheugh Main, Walker's Primrose, West Wear, and Whitwell Primrose	7 9
Burnhope, Craghead, Charlaw, Derwent, Edmondsley, Eighton Moor, Hartlepool Pelaw, Holmside, Lambton's Gas, Lanchester Pelaw, Medomsley, Mickley, New Pelaw, Pelaw Main, Ravensworth, South Moor Pelton, South Leverson, Townley Main, Tyne Main, West Pelaw, Wearmouth Hutton, and Witton	8 0
Peareth, Ravensworth Pelaw, Waldridge, West Garesfield, and West Pelton	8 3
Brancepeth, Dean's Primrose, New Pelton, Pelton, South Peareth, Stella, Urpeth, Washington Hutton, and West Leverson	8 6
Ramsay's Newcastle Cannel	20 0
Wigan Cannel (at Liverpool)	17 0

Scotch Cannel:—

Borghead (at Leith)	42 6
Muirkirk	27 0
Kirkness, best (at Burntisland)	28 6
Capeldrae, 1st quality (at ditto)	28 6
Ditto, 2nd ditto (at ditto)	18 6
Cowdenbeath	12 0
Lesmahago (at Glasgow)	31 6
Ditto (at Granton)	31 6
Arniston	27 6
Wemyss	20 0
Haywood, Wilsontown (at Granton)	23 0
Pirnie, or Methill	15 0
Lothian's Cannel (at Leith)	28 0
Myles' Cannel	23 6

FREIGHTS.

Coastwise—Newcastle.—Per Ton:—

Chatham and Rochester	6s. 3d. to 6 4½
Cork	9s. 6d. to 10 0
Dover, Folkestne, & Ramsgate	7s. to 7 3
Dublin	10s. to 10 6
Exeter Quay	9 0
Ipswich	8 6
London (from Leith)	9s. to 9 6
London (Pool)	7 0
Lowestoft and Yarmouth	5s. to 5 3
Portsmouth & Southampton	8 0
Plymouth	8 0
Shoreham	7 6
Whitstable	7 0
Weymouth	8 0

Foreign.—Per Keel:—

Barcelona	£17 10s. to 18 0
Bordeaux	£13 10s. to 14 0
Boulogne and Calais	7 10
Cadiz	11 10
Cronstadt	—
Copenhagen	10 10
Genoa	16 0
Hamburg	11 0
Havre de Grace	£8 15s. to 9 0
Leghorn	16 0
Lisbon	12 10
Rotterdam	£10 to 11 0
Stettin	9 10
Trieste	11 10
Venice	£15 to 15 10

SUNDRIES.

Best Natle. Fire-bks., p. 1000, £2 10s. to £2 15 0	
Cliff's Fire-bks. (at Wortley), p. 1000	2 15 0
Ingham's ditto (at Wortley), p. 1000	2 15 6
Fire-clay Retorts, p. ft. run, 5s. 6d. to 0 7 0	
Tough Cake Copper, p. ton	76 0 0
English Pig Lead, p. ton	19 0 0
Welsh Bar Iron (in London), p. ton	6 10 0
Foreign Spelter, p. ton	21 5 0
English Block Tin, p. ton	96 0 0
Banca, p. ton	93 0 0
Tarred Rope Yarn, p. cwt.	1 0 0

JOHN VICKARY,

GAS ENGINEER AND CONTRACTOR, IRON AND BRASS FOUNDER,

WORKS—EXE ISLAND, EXETER,

Tenders his best thanks to the various Gas Companies in **England, Ireland, and Wales,** for the very liberal and kind support he has received for the last **22 years,** during which period he has erected and extended above **200 Gas-Works.**

In addition to the numerous towns wherein he has been engaged, he begs reference to the following testimonial:—

Plymouth and Stonehouse Gaslight and Coke Company.

Sir,—I have much pleasure in testifying that the 100-foot Telescope Gasholder and Cast-Iron Tank, erected by you for this Company in 1862, has given the highest satisfaction, and never required the slightest attention or adjustment since its completion.

(Signed) PETER ADAMS, Chairman.

He has also erected a 100-foot Gasholder and Cast-Iron Tank at **Exeter;** an 80-foot Telescope Gasholder and Iron Tank at **Devonport;** a 90-foot at **Torquay,** &c. &c. At either of those works satisfactory references can be made.

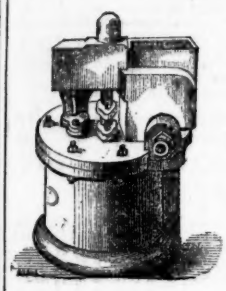
He also begs particular attention to his **Improved Gas-Meters,** either **Wet, Dry, or Compensating,** the materials and workmanship of which guaranteed of the very best description, and which has gained for his Meters so excellent a reputation for these last **20 years.**

RETORTS, DIP & ASCENSION PIPES, HYDRAULIC MAIN, CONDENSERS, PURIFIERS, STATION-METERS, GOVERNORS, VALVES, and GASHOLDERS,

Of any size, and every description of article required in Gas-Works.

Mains, Tees, Connexions, and Syphons, from 2 to 12 in., always in stock, and supplied at Scotch prices.
Clay Retorts and Fire-Goods of every description.
Gas-Fittings of the most modern designs.
Iron Pipe and Fittings, Service Cocks, &c.
Plans, Specifications, and Estimate for the erection of New Gas-Works of any size furnished.

THE LONDON & WESTMINSTER METER COMPANY, LIMITED.



PATENTEES AND SOLE MANUFACTURERS OF

THE ABC GAS-METER.

EDGE'S PATENT INDEX.

MYERS'S PATENT WATER-METER.

(A CYLINDER & PISTON.)

The ABC GAS-METER shows in plain figures the money payable for Gas consumed, as well as the number of cubic feet.

MYERS'S WATER-METER is accurate in measurement, simple in action, and moderate in price.

Manufacturers of the ordinary Wet and Dry Meters, Governors, Photometers, and all other Gas and Water Apparatus.

JOHNSON'S PLACE, LUPUS STREET, LONDON, S.W.

To be seen at work at the Agricultural Hall during the Cattle Show, at the Arcade Entrance, Islington Green.

LIVESEY FIRE-CLAY WORKS,

NEAR BLACKBURN, LANCASHIRE.

ORLANDO BROTHERS,

MANUFACTURER OF PATENT CLAY RETORTS,

AND EVERY DESCRIPTION OF

TUBULAR GLAZED SEWERAGE PIPES, BENDS, JUNCTIONS, ETC.

FIRE-BRICKS, TILES, BLOCKS, AND CHIMNEY-TOPS.

ECONOMY IN GAS PURIFICATION.

Mc DOUGALL'S

HYDRATED PEROXIDE OF IRON.

This Oxide is now well known, and has gained at a number of the largest gas-works at home and abroad a decided preference for efficiency and durability. It is free from any mixture of sawdust or other material, every particle being available for use, thus causing the Purifiers to work double the time before it requires renewing, and saves one-third the cost of labour in charging them. It readily takes up sulphur, revivifies rapidly, and lasts longer than any other Oxide in the market. Prices on application to—

Mc DOUGALL BROTHERS, Manufacturing Chemists,

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WANTED, by the Advertiser, a situation as Working Manager or Foreman in a Gas-Work. Has had 12 years experience as such. References and testimonials as to character and ability.
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WANTED, by the Advertiser, a situation as MANAGER of a small Gas-Work. Is a thorough good Gas-Fitter, and understands the duties performed in such an office. Satisfactory references can be given of past and present employers, if required. Age 23 years. Married.
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WANTED to apprentice a Youth, age 17, for two or three years, to a Manager, where he will have full opportunities of learning the business of Gas-Making and Management of Works, and the Construction of the Apparatus. Has had one and a half year's business experience; part at a Gas-Work. A premium given.
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WANTED employment, by a person well acquainted with the erection and management of small gas-works, main-laying, hot-water apparatus, &c.
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WANTED, a Town Traveller, to call on Gas-Fitters and Ironmongers, having a knowledge of the brass chandelier and gas-fitting trade. Those with connexion preferred.
Apply to W. B., care of Messrs. Street Brothers, 5, Serle Street, LINCOLN'S INN, W.C.

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WANTED, a situation as Manager to a Gas Company making over 10,000,000 annually. The Advertiser is a mechanic, and has had large experience in all the branches of his profession. Can keep accounts by double entry, and collect if required. Testimonials, references, and security can be produced of a satisfactory nature.
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FOR SALE, at the Gas-Works, Oxford, about 80 tons of SPENT OXIDE. Also about 110 ASCENSION-PIPES, 3 in. in the bore, varying in length from 8 ft. 6 in. to 4 ft. 9 in., and 30 H pipes, with caps and eye-bolts complete, which were only taken down to be replaced by larger pipes.
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FOR SALE.—A Good Cast-Iron Tank, in excellent condition, 45 feet diameter, 14 feet deep, either with or without Gasholder.
Also the following STATION-METERS:—

One to pass	12,000	cubic feet	per hour.
One "	8,000	"	"
One "	4,000	"	"
Two "	3,000	"	"

The whole have been taken apart, thoroughly examined, and are in good working order, equal to new.
The above have been taken down to make room for larger.
Apply to JOHN VICKARY, Gas Engineering Works, EXETER.

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ABOUT 400 tons of this valuable substitute for Cannel Coal to be SOLD.
Mr. Evans, of the Chartered Gas-Works, reports that this Pitch yields 22,000 cubic feet of 28-candle gas per ton.
The Gas being very rapidly produced makes this material a great desideratum for Gas Managers.
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THE Broughton Coal Company, near Wrexham, have about 1000 tons of CANNEL COAL to dispose of.
Apply at the BROUGHTON COLLIERIES, near WREXHAM.

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THESE Retorts have been introduced at a large number of Gas-Works. The great durability of the Ribbed Iron Retort especially recommends it for works where an exhauster is not used. The Clay Ovens and Retorts are so constructed as to favour the more speedy and effectual carbonization of the Coal, whilst the deposition of Carbon does not so readily take place as in the ordinary Retorts.
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EVERY description of Gas Lanterns and Reflector Lamps for Shop Windows kept in stock. W. DAVIS, 17, Wells Street, Oxford Street, LONDON, W.

D. W. OGG and CO. have lately engaged to represent one of the largest shippers of Scotch Cannels at prices that cannot fail to command the attention of Gas Companies at a period like the present, when quality of gas seems so desirable.
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HYDRATED OXIDE of IRON
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RETORT SETTINGS, heated by tar without the production of smoke.
STEAM-ENGINES and EXHAUSTERS, separately or combined.
FOUR-WAY VALVES, one of which is equal to three ordinary Valves.
STATION GOVERNORS in which the Gasholder cannot tilt and cause accidents.

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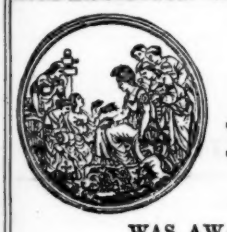
"The Author is well qualified to speak authoritatively upon the important subjects to which his pamphlet refers."—ARTIZAN.



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A PRIZE MEDAL

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These Valves are formed of two cylinders, working one on the other horizontally, having their faces ground perfectly gas-tight.

They are adapted either as central valves, for two, three, or four purifiers—as bye-passes—or as inlet and outlet-valves for gasholders.

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SILVER MEDAL, INTERNATIONAL EXHIBITION, PARIS, 1867.

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PLAIN, GALVANIZED, & ENAMELLED, for Gas, Steam, and Water, from ⅛ in. to 6 in. bore.

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At their Oldham Establishment, which has long possessed the reputation of supplying this description of apparatus of the most perfect construction and appropriate design.

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This Coal is largely used in the Gas-Works at Glasgow, Paisley, Port Glasgow, Edinburgh, Leith, and many other towns throughout Scotland. It yields 10,648 cubic feet per ton; illuminating power, 27·55 standard candles; coke per ton, 9 cwt. 83 lbs. Railway communication from the pits (at Coatbridge) to all parts of the country; ports of shipment in Firths of Forth or Clyde.

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same quality as supplied by us to several of the most extensive Gas Companies, and which has given entire satisfaction.

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INTERNATIONAL EXHIBITION,

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AMBLECOTE FIRE CLAY AND BRICK WORKS,

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All sizes, from ⅛ in. to 4 in. diameter and upwards.

Also,

HORSE SINGEING APPARATUS, best make, with GAS-BURNERS, COMBS, and INDIA-RUBBER TUBING, all complete.

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WASHERS for GAS and STEAM JOINTS.

VALVES (pure solid Rubber) for STEAM-ENGINES.

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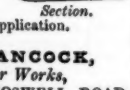
FLANGE TUBING, for excluding Draughts and Dust through WINDOWS, DOORS, and GLASS CASES.



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For Gas, Steam, Water, and other purposes.

GAS APPARATUS OF EVERY DESCRIPTION.

High-pressure Water-Valves and Cocks, &c., &c.

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FIRE-BRICKS, LUMPS, SQUARES, and TILES of all dimensions.

GAS-RETORTS always in stock.

GARDEN EDGINGS of various patterns.

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The above sieves are used by the principal gas companies in London and the country. Their utility, durability, and cheapness combined, render them superior to all others.

Testimonials from gas engineers who have tested their qualities forwarded on application.

All orders punctually attended to, and estimates given if required.

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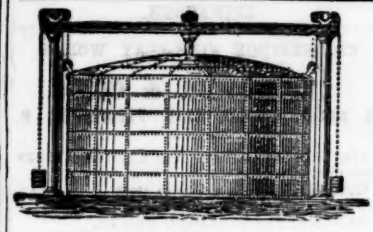

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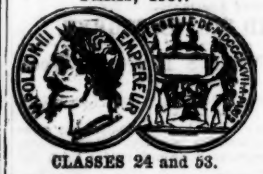

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LONDON, 1862.

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W. INGHAM and SONS, having for many years been extensively engaged in the Manufacture of

RETORTS AND FIRE-BRICKS FROM THE CELEBRATED WORTLEY FIRE-CLAY

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The Works are of such magnitude as to ensure the prompt execution of orders to any extent.

Estimates for Setting, or Bricklayers sent when required.

GAS OVENS IN SEGMENTS OF EQUAL QUALITY.

A large stock of Fire-Bricks, Fire-Clay, Terra Cotta, and Drain-Pipes of all sizes kept in London at CHRISTIE & CO.'s Wharf, 64, Bankside, Southwark, where all particulars of Prices, &c., may be obtained.

N.B.—*Export orders continue to have prompt attention.*

KING BROTHERS,

STOURBRIDGE FIRE-BRICK AND RETORT WORKS.

KING BROTHERS beg especially to call the attention of Gas Companies to the superiority of their Retorts, which are made from the celebrated STOURBRIDGE FIRE-CLAY. Mr. King has patented a Kiln for burning Retorts, by which Patent all Cold Air is excluded from the Kiln while burning, thus rendering them FREE FROM CRACKS AND CORRECT IN FORM. By great care in Manufacturing, combined with the advantages in burning, a VERY SMOOTH SURFACE is obtained, rendering them less liable to carbonize.

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Every Retort and Brick is branded "King Brothers, Stourbridge."

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Gas Explosions are of frequent occurrence, but we do not hear of them unless death has resulted. As in the case at Clerkenwell lately, gas explosions may generally be traced to the use of Tubes of defective workmanship and inferior iron. Adopt the Tubes and Fittings of John Russell and Co., which are all of the best quality.

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210,000 IN USE.

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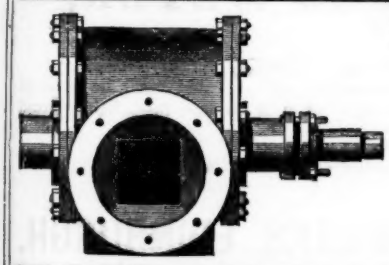

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